ROCKS and MINERALS

PUBLISHED BI-MONTHLY

Edited and Published by PETER ZODAC

November-December 1951

Contents for November-December, 1951

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CHIPS FROM THE QUARRY

MY MOST GRATEFUL THANKS!

My most grateful thanks are extended to all dealers, advertisers, writers, subscribers, and friends who cooperated so heartily in the issuing of the 25th Anniversary Number of ROCKS AND MINERALS. This special issue, beyond all doubt, was the most outstanding in non-technical mineralogy ever to make its appearance in the English language. And I am especially grateful to Arthur Montgomery and Dr. Clifford Frondel, my two good friends, who planned and carried out all the details of the 25th Anniversary Number.

As I look back on my 25 years of magazine publishing, and trace its growth from a few pages to 112, this progress is not due to my personal efforts but to the combined efforts of my many friends who have been ever generous with words of advice and encouragement, articles, subscriptions, advertisements and other manifestations of help. To all these kind friends I am so heavily indebted that I may never be able to repay them.

PETER ZODAC

ONE EDITOR CONGRATULATES ANOTHER!

Dear Mr. Zodac:

The 25th Anniversary issue of ROCKS AND MINERALS has just been received. I desire to add my very sincere and hearty congratulations to you for twenty-five years of devoted and unselfish service to the science of mineralogy. The expression of a vast host of friends and well-wishers is truly expressed in a tangible manner in the Anniversary issue of the journal you founded. It was a slow and arduous task and at the time very discouraging but it has paid off handsomely, not in money, but in true friends and a worth-while service to the science. May you continue for many years to come the splendid work you started a quarter of a century ago. This is the ardent hope of all readers of ROCKS AND MINERALS.

Sincerely yours,
Walter F. Hunt,
Oct. 23, 1951 Ann Arbor, Mich.

(Dr. Hunt is Editor of THE AMERICAN MINERALOGIST, America's most eminent mineralogical magazine, but too technical for the amateur mineral collector).

WARNING ON ROXBURY FALLS, CONN.

The following letter, dated Oct. 8, 1951, was received from Peter R. Farley, 12 Oak Place, Fair Haven, N. J.

"The Newark Mineralogical Society visited Roxbury Station and Judd's Bridge, Conn., on a Saturday in September, where we had very good luck. My son-in-law (Wesley Crozier) and I stayed over to visit the Roxbury Falls locality for garnets. We followed directions given in R&M, Sept. 1947, and spent a couple of happy hours picking up and chiseling out garnets. We returned to our car, which was parked on the highway, and started for home. About two miles out, we were stopped by a state policeman and told to leave our car there and to return to the garnet location in his car as the owner had a complaint of trespassing against us. Officer John F. Sweeney very kindly smoothed out a bad situation and also a most embarrassing one by having the owner of the property, Mr. Howard Green, agree to let society members on the property provided they first ask permission and that I put this statement in the next issue of ROCKS AND MINERALS, so its readers may take note. I also promised Mr. Green that a copy of this issue would be sent him; I also want a copy of the same issue sent to Officer Sweeney as he seemed quite interested in minerals. Who knows, we may have a couple more enthusiasts!"

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MY 1951 WESTERN TRIP

By PATRICIA ANN BERRY

19 Stocker Avenue, E. Lynn, Mass.

No one of our immediate family, other relatives, nor friends had less hand in planning our 8,000 mile trip West than I. With the coming of Spring to the best and most beautiful campus of the University of New Hampshire, also came the shadow of final exams. While my parents scurried around at home preparing for the trip,I toiled getting an early tan at the nearby Maine beaches, wished vaguely that I knew where my notes for the next exams were, worried about marks, and wondered why we weren't going to Lake Winnipesaukee as usual. I was quite happily convinced that New England was the best place on the globe, so why should we go elsewhere? Thus matters stood until Saturday A.M. the 9th day of June, yawning from lack of sleep for as far back as I could remember, fortified only with the four thousandth cup of black coffee, I managed to reach my last exam.

What happened after that is very hazy in my mind. Somehow that afternoon my parents managed by clever packing and much cramming to get all my accumulated junk from another college year into my car, and in the family one. At home in Lynn, Mass., the procedure came off in reverse. Sunday Daddy and Mom repacked the family Hudson with our clothes while I sat in the middle of the general confusion surrounded by ROCKS AND MINERALS and the MINERALOGIST magazines sorting them into 2 piles while I wondered out loud "Are we heading for Florida, Peru or South Africa?"

At 3:00 A. M. Monday morning I partially awakened to find my parents rushing out suitcases to the car. Finally they managed to pack me, too, and the Berrys were off.

Several times I had said determinedly 'Now this isn't going to be a geologic field trip, it won't be fair to you two if it is." I soon discovered that Mrs. Grace Dearborn, past president of the Boston Mineral Club, had mapped an itinerary of mineral "musts" to visit along the way. Mr. Al King, rockhound of Lynn, had a few more places we must visit and suggested that my gemmy rose quartz from Maine would make excellent swap material along the way. All the necessary equipment was going along too, and not just for the ride as it turned out later.

Galena, Illinois, Visited

For three days we just made mileage, but that didn't prevent us from enjoying again the scenery thru the eastern states. We arrived in Galena, Illinois, in the late afternoon of the 13th. Stopping at the Triangle Cabins, we discovered that the proprietress had a small display of minerals from this zinc-lead mining region. She directed us to the Eagle-Picher Mine that was visible on a not too far off hill. There we were very fortunate to meet Mr. Tom Ray at the mine who showed us the surface activities. Quite awed, we watched the tremendous mechanically-operated bucket lift 3 1/5 tons of rock and empty it with a roar every 37 seconds into the hopper. He showed us the entire process of separating the sphalerite (black jack) and what very little galena there is left from the gangue. This particular mine has reached a depth of 307 feet and operations extend over ½ a mile. The nearby Black Jack Mine, 60 years old, has almost run out, we were told; but this three year old Eagle-Picher Mine is still going strong and is being worked day and night, giving a 5% yield. Mr. Ray gave me several specimens of sphalerite and calcite and some tiny galena cubes.

He also allowed us to take a small quantity of the powdered lead and zinc which we had watched being separated. He explained that the tremendous amount of 1500 tons of coarse and fine tailings a day were sold to the railroad for roadbed. We were immensely pleased by the hospitality we received at the mine, and Daddy was grateful for the ease with which the mine was reached, remembering weird places his precious car had traveled to find several New England localities.

Touring South Dakota

On June 15th, after seeing what seemed to us to be unending miles of flat land thru the impressive farm belt of the midwest, we drove thru the Bad Lands of South Dakota; our first real taste of the West, and something different. We stopped at the gift shop there and saw a tremendous cluster of sand crystals found locally. The extent of the weird varicolored gullied mounds that are characteristic of the Bad Lands was amazing, and I had to stop several times to collect a little of each shade of the muds which make an attractive bottled display of five colors.

From there we drove to Rapid City, S. D. Securing good accommodations for the night, we drove on to Deadwood City. Just outside Rapid City we were attracted by signs advertising a petrified forest area. When we reached it, we were cynical, but paid our 35¢ per person to walk down in back to see a quantity of stumps and logs. It was worth the admission if only to stop for a breather and walk leisurely thru the cool pine woods. On the way along I found the guide was the owner, and that we both were interested in minerals. Back at the shop we started swapping. Mr. Roscamp gave me a lovely double crystal of beryl from Keystone, So. Dakota, also amazonstone and rose quartz from the same locality; some beautiful fossilized wood from the Bad Lands, and of course, some of the wood from the forest right there. Mom spent some time sitting on an up-ended orange crate listening to stories of the old West told her by Mr. Sisely, a real old-time cowboy who also knows mineral locations in the Black Hill region.

As it was getting late, we rushed on to Deadwood City, the famous old mining town of Bill Hickok and Calamity Jane fame, from which most of the gold of the United States still comes. We visited the wonderful old museum there and found it full of relics of the wilder days. Along with the old mining equipment from the towns of Deadwood and Lead was also an excellent collection of Black Hills minerals. The family had difficulty prying me away, but we wanted to visit the final resting places of Calamity Jane and Bill Hickok. The ride up Mount Moriah to the cemetery is decidedly precipitous and the biggest thrill of this very exciting day came when we stood on the edge of the old cemetery looking straight down to the mining towns of Deadwood and Lead spread out before us with the buildings of the famous Homestake Gold Mine across the valley. As the silent early evening breezes wafted up from the streets, we were too far away to hear the modern day sounds, but I though I heard (just for an instant as the shaddows began to fall) the faint sound of hoof beats and gun shots echoing once again up from the valley where strong and reckless men had lived so dangerously, years before.

Next morning, we rode up to the City Park to inspect the dinosaur that had been looking down on us all night. We viewed him and his cement fellows and enjoyed the view of the city from Hangman's Hill. Afterwards we visited the excellent South Dakota School of Mines Museum in that city and for very little, purchased a specimen of Huebnerite from the Two Bit Mine and a specimen of Cummingtonite from Lead. At the museum I met three geology majors from Massachusetts (students of the University of Connecticut) who were travelling in a car which had seen better days and on which was painted "Wyoming or Bust."

Driving back into the Black Hills, we enjoyed some the loveliest and oldest geological scenery of our country, and were properly awed to view the man-

carved faces of four great presidents at Mount Rushmore.

Yellowstone National Park

The next day, June 17th, we rode up in the snows over the Big Horn Mountains. We visited the William Cody Historical Museum in Cody, Wyoming, then drove through Shoshone Canyon where I collected a little of the red clay from a road cut.

On to Yellowstone where each hot spring had to have a look. Old Faithful was! The Grand Canyon of Yellowstone is spectacular beyond words with its depth and colors. The Upper and Lower Falls left us breathless (so did the high elevetion). I collected a few specimens of obsidian from the road under Obsidian Cliff which showed flow structure. A hill of fumaroles, called Roaring Mountain, named because of the low rushing sound they emit was to me, spectacular as any location in the Park.

In Yellowstone, as well as the other National Parks we visited, we found accommodations for travellers woefully inadequate. Unless you are willing to "rough it" or sleep in your car, the quality of accommodations is nil. The only solution is to wire long ahead for reservations even in early spring.

It didn't seem possible that so much geology could be packed into the Park, but scenes of volcanic activity past and present are everywhere, surrounded by rugged glacial topography. The park museums are very fine and describe the local geology in a simple manner by charts and diagrams.

Even after the splendor of Yellowstone, the Teton Mountains were a sight we'll long remember. We never imagined mountains could get so high, so snowy in June, and so impressively rugged. The Jackson Hole region was one of the most beautiful of the trip.

June 19th and on to Salt Lake City. We passed the amazing Bear Lake which is the brightest green-blue possible.

Touring Utah

In Salt Lake City we visited Dr. Olivia McHugh whose hobby is minerals. We had a very nice chat with her and she gave us a list of "musts" which we followed religiously. First we enjoyed a trip thru the State House which contains an excellent collection of Utah's commercial minerals and is well worth a visit. Next we had a privately conducted tour through the Mormon Office Building where the guide, Mr. Robinson, showed us the beautiful marble pillars and walls, and a room completely done in exquisite onyx slabs. We then listened to the wonderful organ recital in the Tabernacle while we recalled Mr. Robinson's words about the courage of his ancestors who settled this once arid land and made "the desert bloom as the Rose." Then out to Sunset Beach to collect some of the oolitic sand ($CaCa_3$) that Grove Karl Gilbert mentions in his monograph "Lake Bonneville." We were glad to get the chance of a close look at America's Dead Sea and we had previously noted the many terraces high on the Wasatch Range marking the shore line of the once tremendous fresh water Lake Bonneville which Gilbert so painstakingly surveyed in 1869. I collected a bottle of salt water from the lake, some salt crystals that had formed in the hollow of a rock, and a pebble crusted with the halite.

We reached Zion National Park on June 21st and remembering the lack of accommodations in Yellowstone we stopped just outside the Park at the Zion Rest Cabins in Springdale. A visit to Herbert's Rock Shop across the road was made; we bought some petrified dinosaur bone from the Escalante District, Utah, some snowflake obsidian from Millard County and two nice pieces of the scenic sandstone I had read about in ROCKS AND MINERALS of July-August 1950.

As the day cooled toward evening, Daddy and Mom sat in front of the cabins looking up at the tremendous red cliffs of the Chinle formation Triassic Period, while I scrambled around on the sides of them collecting pebbles of jasper that had been washed out. These I shared with the man in the next cabin who was a Californian and "liked pretty stones, but didn't know what they were called." (Another rockhound in the making).

He was very pleased with the gift of a specimen of my Maine rose quartz, too. Still later we walked over to the gas station that is connected with the cabins where I had noticed a few minerals for sale. The Cabins' owner sent for a Mr. Wooley who owned these minerals. He soon showed up and we had one of the most interesting mineral talks of the trip. Mr. Stevens G. Wooley, who owns a ranch in Springdale, has been at one time a mining engineer and about everything else, it seemed. I was fascinated by his wealth of geologic lore in all its fields. I bought two small Utah tourmalines (my favorite mineral by the way) and he made me a present of a nice specimen of mottramite from Arizona.

Next morning early, we rode through fabulous Zion National Park. Its massiveness quite overpowered us as we took the mile long "Narrows" walk before breakfast. Afterwards we followed the road on a series of hairpin turns up to the man-made tunnel thru the mountain, stopping to enjoy the gorgeous views of the Park from each of its picture windows cut into the walls of the tunnel. On the other side we drove past the steep cliffs of petrified sanddunes; beautiful examples of cross bedding "frozen" in the Navajo Sandstone.

Then in the heat of the day, (bad timing) we crossed the Painted Desert which didn't impress us with anything except its heat. We felt worse when we stopped for lunch at the Gap, and were told that it hadn't rained there in three years. We were appalled to see the Indians living in this waste which the United States has allotted to them.

Grand Canyon National Park, Arizona

Reaching Grand Canyon National Park's south rim in the early afternoon, we were fortunate to obtain a fine private cottage. As usual, the Park facilities were worse than poor, and many had to sleep in their cars.

That evening, I stood on the edge of the Grand Canyon scarcely believing I was really there. With my Historical Geology text in one hand I estatically named off the different ages in descending layers below me. People stared, but I was blissfully unaware.

June 23 was spent riding up and down, visiting the excellent museums along the way and listening to the lecture from a Ranger given at Yavapai Point on the geologic history of the Canyon. I had wanted to ride down the Bright Angel Trail, but probably for my own good, I was spared because the travelling public was so great this year, that it was necessary to make reservations ahead for this trip down the canyon.

Here, too, we indulged in a few souvenirs—mostly turquoise jewelry. We felt we had to have a few pieces before we left the Indian country.

Next day, early, we hurried back across the desert stopping only to add two beautiful Navajo rugs to our cargo. These we bought from a former Lynner at the trading post at Marble Canyon who seemed to be homesick for the East Coast. We did make one more stop. Mom and I decided that we weren't going to leave Arizona without a single cactus. We stopped mid loud protestations from Daddy who "wasn't going to have that thing in the car." We captured a small and rather sad looking specimen and gingerly lowered it into a Dixie Cup where it remained for the rest of the trip and incidentally it now seems to be thriving on Massachusetts soil.

Bryce National Park, Utah

In the afternoon we reached Bryce National Park and Red Canyon. Here I collected some of the colored clays to be put together back home.

We realized now what Mr. Wooley had meant when he said "Zion is the massive ground work, while Bryce is the filigree." Certainly Nature worked with a delicate hand not only in fragile formations, but in pastel colors. We were especially impressed with the Natural Bridge and the Silent City in the Canyon.

Touring Colorado

June 26th saw the Berry family at Idaho Springs, Colorado, where we enjoyed the hospitality of Mr. and Mrs. Noblett, two of the grandest people in the West. From them I bought a beauti-

ful cabochon of icicle-cold-blue African crocidolite (hawk's eye). Mr. Noblett gave me some petrified redwood that I put aside for my pebble-polishing friends at home. He also gave me a lovely little turquoise nodule and a polished bit of the same from New Mexico, and a specimen of petrified palm from California. I bought a silver ore specimen from the Terrible Mine in Silver Plume, some gold ore, sylvanite, from the Kitty Clyde Mine in Spring Gulch. We certainly enjoyed our visit with the Nobletts. While still in Idaho Springs on the main street we glanced down an alley and saw a lovely little waterfall and an old water wheel; certainly a pretty picture in its unexpected setting

That night we stayed in Denver and visited the National History Mineral collection there which was very good.

Next day we landed in Manitou Springs and took the morning ride up Pike's Peak on the cog railway. We had "made it." The ride up was very enjoyable, but we decided that it wasn't as exciting as the trip up Mt. Washington in New Hampshire on the much less modern cog railway.

In the afternoon we took the beautiful ride to Cripple Creek. It was a dirt road and we thought it would never stop ascending. We rounded one last curve and there spread out before us was what appeared to be a large western town. As we drove down into it, we were amazed at the thousands of dump heaps like ant hills and abandoned shafts in every direction on the surrounding hills. When we reached the main street we found ourselves in a virtual ghost town. Many of the buildings were boarded up and in those that weren't, the insides had been taken out leaving only the wall-like husks. Almost all the mines are shut down, but the people who still live in the area resent the inference that their town is anywhere near a ghost town. Cripple Creek has been thru many ups and downs and some worse economic times than now.

We visited the shop of George Bowman from whom I bought a specimen of sylvanite. Mom bought some old bottles that had turned a beautiful violet from the sun's rays while lying on the dump heaps. Mr. Bowman told us a little of the history of the region.

On the way out, I stopped at one of the old abandoned mine shafts and collected a few rather poor specimens of "fool's gold" just for the pleasure of collecting something myself in this famous region.

We then drove to Florissant where, I had read, the beautiful amazon stone could be found. We stopped at the only gas station there and asked the owner if he could tell us where we could collect or buy some. He said very firmly that we couldn't because the location where it is found is owned by an ex-ambassador who wouldn't be agreeable to letting us collect. Feeling squelched, I climbed back in the car. However, before I could get the car started, the garage man strode up to the side and dropped a large microcline crystal group into my lap and rushed off barely giving me time to yell an astonished "thank you" after him. I certainly did appreciate his unexpected gift.

In Woodland Park on the way back, we stopped at the Hobby Shop and met the very wonderful Mr. Shady who is the owner. He had a very fine collection of minerals which we enjoyed looking over. He was more than generous with a present of some specimens of staurolite and orthoclase crystals from New Mexico and some of the Florissant amazonite.

Tired, but very happy, we returned to the El Colorado Motel in Manitou Springs which we agreed was one of the nicest motels we had struck on the route.

The next morning was spent in the Garden of the Gods. It was rather misty and we perhaps missed some of the sights, but we saw the high spots.

Underground In A Lead-Zinc Mine At Baxter Springs, Kansas

For the next two days we dodged around washed out roads, passing acres of submerged farmlands, houses and barns thru Kansas. This was only the end of June and in July the floods increased in their fury leaving millions of dollars of

destruction behind. Finally we reached Joplin, Missouri, on June 29th and rode over to Galena, Kansas, which is next door, to visit Boodle Lane. Mrs. Dearborn had written him that I was coming sometime the latter part of June. Sure enough, he was even willing to take me underground in a mine the next morning. That was to be my first experience underground in a working mine.

Early the next morning we picked up Mr. Lane and after meeting his wonderful wife, Lois, we started off. Our destination was the West Side Eagle-Picher Mine in Baxter Springs, Kansas. At the mine I was fitted out with a miner's hat with a light on it and a storage battery on my belt. Boodle and I climbed into what appeared to me to be a large bomb-like tube with a hole cut into it. We held onto the pole running up the middle and were lowered 402 feet downward at a breathtaking speed. On reaching the bottom, we climbed out and I saw little fireflies bobbing about way off. As we moved toward them, they materialized into men with lights on their helmets, too.

The mine wasn't anything like I had expected. I had in mind pictures of coal miners in tunnels like human gophers. This mine was more like a subway waiting room. The ceiling was so high in most places that my light barely showed the mineralized roof. Tremendous pillars of mineral held up the ceiling. These pillars and the walls flashed with masses of galena and sphalerite. Mr. Lane showed me a cavern which was composed entirely of an odd optical calcite with curves on the rhombohedral faces. In the calcite were tiny marcasite inclusions. I crawled into the cave and enjoyed for a minute being surrounded by the glittering crystals that flashed in my light. We collected a chunk of the calcite and moved on to where men were loading ore. Mr. Lane introduced me to several of the men who looked mildly surprised at the sight of a girl and then grinned affably. The ground boss, Frank Charlton, told us he was driving to another part of the mine, and would we care to go along—we would indeed. The trip was made in what seemed to my unmechanical mind to be a cross between a tractor and a truck with the diversified ability of a jeep. It was quite a bumpy ride, but very exciting with the strong lights of our transportation lighting up the tunnels way ahead. We drove thru several narrow low tunnels that were merely connecting passageways to more tremendous rooms. At the end of one of these tunnels we passed thru stood an enormous fan, part of the ventilating system that sent a rush of air into our faces as we rode toward it.

Finally, after quite a drive up slopes, around pillars, and thru tunnels, we came upon some more men busily working an enormous drill. They stopped activities long enough to nod at us. I asked the man who was running the drill how it worked; whereupon he showed me, and I jumped a foot, startled at the roar of noise. It was fascinating watching the drill bore into the solid ledge.

Mr. Lane in the meanwhile was off exploring and I went after him to watch while he cleared away a pocket of large calcite crystals, the golden variety that is pictured in so many texts as coming from the Tri-State region. The pocket was filled with loose debris, and Boodle cautiously worked out several hunks of sphalerite on saddle-shaped dolomite and on my request, hammered out the 7" high calcite crystal that hung down from the cavity. These specimens, along with some cleavage pieces of galena and some attractive specimens of quartz crystals on the dolomite, were very carefully wrapped in newspaper. This amazed and amused the miners who thought we rockhounds lavished an unnecessary amount of care on our "worthless rocks." Piling our finds into a burlap bag, we loaded it and ourselves back into our conveyance and rode off again. Mr. Charlton asked me if I would be able to find my own way out to the entrance shaft. I just grinned, not having the vaguest idea as to the direction of anything after our tortuous ride. He said that we were a quarter of a mile from the Oklahoma state line. From him and Mr. Lane I found that this mine (the West Side) was part of the Vinegar Hill

Bar and that these underground passageways ran for about a hundred miles; one mine leading into another under the three states of Kansas, Missouri and Oklahoma. This particular mine along with many others is pretty nearly worked out and soon the great pillars of high grade ore will be shot out, removed, and the mine abandoned. This mine is now averaging 2½% yield.

Back where we started, although it could have been in Missouri for all of me, we thanked Mr. Charlton for his transportation and kindness in answering questions and prepared to ascend to the upper regions. Three tugs on the rope brought the tube down. We climbed in with our burlap bag of minerals and were whisked to the surface giving me barely a second to wonder if I could get the bends.

Daylight looked very bright after the darker-than-night gloom of the mine, even though it was a rainy day. It was with considerable sadness that I abandoned my miner's helmet, light and storage batteries. Presently after a walk around the buildings on the surface, Daddy and Mom showed up and we drove back to the home of Mr. Lane on the famous Route #66, spending the rest of the morning visiting with Mr. Lane, admiring Boodle's collection as well as Lois' who has an enviable one. A great many of Boodle's specimens are museum pieces, a breathtaking one being a great slab of beautiful green marcasite crystals. I bought several specimens of the optic calcite and some others of calcite crystals, chalcopyrite, ruby zinc (sphalerite) crystals, galena cubes, dolomite crystals, and drusy quartz on chert; all in single specimens! Also one choice cluster of galena cubes with a single chalcopyrite crystal in the center. Mom acquired for her garden wall some lumps of colored glass that Boodle has piled in large mounds in his front yard to catch the eye of passers-by. Daddy completely ruined his chances of ever again saying that his daughter was the rockhound of the family by buying for *himself* a most wonderful specimen of good sized doubly-terminated calcite crystals that had mended a cracked "stick" of chert. This latter specimen, I might add, occupies a place of honor on the mantelpiece at home; a place where no specimen of mine has ever been privileged to rest.

Finally, since the afternoon had somehow crept up on us, we packed our specimens including the generous gift of all the minerals gathered that morning in the mine. All these were carefully stuffed into the few remaining inches in the back of the car. We could not possibly thank Lois and Boodle Lane enough for their generosity. Surely the Lanes are two of the nicest rockhounds ever.

The remainder of the afternoon was spent visiting the museum in Shifferdecker Park in Joplin, which is certainly worth a visit for all mineral collectors. The exhibits of mining equipment were very good and it was interesting to see the miner's names for the minerals on the labels, as: tiff (calcite), rice rock (dolomite), mundic (marcasite or pyrite), etc. The museum attendant was most friendly, and we enjoyed our visit.

From Joplin we dodged more floods to St. Louis, and July 4th found us eager for New England and home.

Flint Ridge, Ohio

One more stop for minerals at the Flint Ridge locality near Zaneville, Ohio. Inquiring at Brownsville, the postmaster gave us the name of Mr. Watkins who lives nearby. Mr. Watkins was most friendly and helpful. He showed us his huge collection of Indian artifacts from the Flint Ridge area, the accumulation of a lifetime. From this gentleman we bought a knife and arrowhead, a piece of chalcedony and a pretty banded flint with a specimen of drusy quartz on flint. He directed us to the Flint Ridge Memorial Park, and from the entrance we took the right hand road and drove and drove. After several minutes of seemingly going nowhere, we got discouraged and decided to turn back. I climbed out to look around while Daddy turned the car in the narrow road and I found to my delight that the road was covered with the vari-colored quartz mineral. Despite the fact that it was beginning to rain, we all climbed out and the three of us walked up and

down the road for a short distance picking up the prettiest bits, till we had a bag full. We left Flint Ridge feeling very pleased with ourselves, delighted to be able to collect in the old locality where Indians from great distances had visited for flint so long ago.

Home At Last!

The next evening found us enjoying the view of the Delaware Water Gap in Pennsylvania, while I had a wonderful time explaining to my family about water gaps in general and this one in particular.

July 6th and home at last and did it look good after 7999 (exactly) miles. New England was still best, but all of U. S. A. looked pretty wonderful to us Yankee tourists. We had always suspected it, but now we had seen for ourselves a fairly large segment of it.

Our trip was a huge success and my mineral collection has many spectacular additions. But of course you understand it wasn't a mineral tour—well, it wasn't supposed to be.

LAFAYETTE, PA.

By Chas. A. Thomas

706 Church St., Royersford, Pa.

The paper on which this manuscript is typed (the original, not the magazine paper) is the famous Hamilton Bond, made in Miquon, Pa. Mr. Harold Poole, who is a booster for his company, suggested I try it. The point is this: the Hamilton Paper Company is almost directly across the Schuylkill River from two famous old quarries, the Prince Quarry and the Rose Quarry. Naturally, Mr. Harold Poole, who lives within view of these old localities, had told me many things about them. Garnets by the bucketful, talc, bruennerite, asbestos, tremolite and nearly a dozen other interesting minerals were found there.

Quite a few years passed and though the writer wanted to visit the old-time localities, which by the way are just a few miles down river from Conshohocken on the West bank, he never did visit them until very recently. Mr. James Irvine, who also works not far from the localities, advised us to get down there and have a look. The reason? BLASTING! Once again the garnets are scattered all over the ground, bruennerite in fine specimens have been exposed. Micro chromite and or magnetite are reposed on the bruennerite crystals. This mineral is a nice tan colored cementing layer of a ferro-magnesite. White magnesite with platey seams of ilmenite, though not in fine specimens, show some interest under a good lens. Perhaps we stumbled over actinolite also and corundum and one or two types of serpentine. Not only is blasting being done on the rocky west bank of the Schuylkill River near Rose's Quarry, but new exposures and most certainly fresh exposures of many interesting minerals will show up at many points along the new extension to the Super-Highway which will parallel the river for quite a distance. Possibly many more minerals and crystals will be exposed in this new stretch of road than on the finished highway further West.

Across the river from Lafayette, one may see many fine specimens of museum quality. Large perfect quartz groups, exquisite crystals of nearly all of the important minerals, excellent fluorescent specimens. All of these, however, are to be seen only in Mr. Poole's famous collection in his home at Miquon, Pa.

SOME CUTTING MATERIAL LOCALITIES AROUND NEW YORK CITY

By JOHN SINKANKAS

1107 S. Oakcrest Road, Arlington, Va.

Introduction

No one in his wildest dreams can claim an abundance of cutting material in the vicinity of New York City, nevertheless there are a few places which can produce some fair material worthwhile cutting by the amateur. Connecticut has produced some splendid faceting material in times past but only incidentally to the mining of feldspar from granitic pegmatites. The amateur cannot proceed to this state at the present time and expect to return with any significant amount of gem quality material. Until the pegmatites within easy driving distance of the Metropolitan Area are again worked in ground fruitful of gem material, he can only putter around overgrown dumps and long nostalgically for the days gone by when the clatter of steel on rock was music to the ear. A few localities do exist however, and it is the purpose of this paper to describe those visited by the author during a leave period taken in July, 1951.

Noble Serpentine at Montville, N. J. —Recommended

Top-notch serpentine can still be found in generous amounts at the noted Montville locality. The open pit which was quarried many years ago for blast-furnace limestone by the Boonton Iron Company is now overgrown with sizeable trees and brush but not so much that it interferes seriously with collecting. The locality is about one mile north (as the crow flies) of the northern end of a summer resort lake called Lake Valhalla. This charming lake is strictly private and permission to enter the collecting grounds should be obtained in advance from the caretaker whose office is at the entrance to the lake.

Entering the lake property gate, take the lefthand tar road around the lake which gradually turns north. Continue until a small brook is reached which can be identified by the fact that it runs thru a rocky glen lined on both sides by stately hemlock trees. Cars may be parked conveniently at this point. Looking upstream, an ox-cart trail follows the stream on the left bank. Follow this for about one mile and then as it branches bear left. The trail rises gradually and turns back on itself until it passes over the northern extremity of the limestone, then still turning, parallels the deposit and finally a side path leads into the workings proper. I strongly recommend fall as good time of the year for this trip since the normal dense foliage of summer makes the finding of this locality a matter more of instinct than dead-reckoning.

The outcrop of crystalline limestone at Montville is a peculiarly isolated one of no great extent. It trends NE-SW and has been opened in spots for a distance of about a half mile. The serpentine occurs in it as veins and gatherings ranging from the finest quality when completely imbedded in the limestone to dull almost opaque blackish stuff when adjacent to the surrounding gneissoid country rocks. The best qualities are quite translucent, almost like chalcedony, but correspondingly rare. The color of this finer material is a slightly greenish yellow while the more abundant serpentine is the typically oily green varying from yellow-green to olive green. Much of the serpentine is obscured by a coating of weathered material which is typically opaque and of a chalky-white appearance. This coating may obscure the unaltered serpentine underneath but is at the same time an infallible indication of its presence. Serpentine is easily fractured and the Montville material is no exception. Large pieces of unbroken material are therefore rare but plenty is available for generous sized cabs. Some of the larger sizes containing cracks should be satisfactory for bookends. Occasionally encountered in the serpentine itself are veinlets of splendid chrysotile asbestos, white and glistening, making such specimens fine cabinet pieces.

The Montville material is treated with standard technique for undercutting material, that is, careful wet-sanding on 600 or 400 cloth followed by chrome oxide on leather. Lemon peeling on felt is certain. Dop with as low a temperature as possible to prevent further cracking.

My thanks are herewith extended to Mr. C. C. Cook of Montville, who took me in as a stranger, led me to the right path, and arranged with the caretaker for my visit to the working. Mr. Cook lives in a stately house on the corner of the road leading from the main highway into Lake Valhalla.

Hematite, Pyrite, etc., at Andover, N. J. —Go If You Must

My 1868 edition of the Geology of New Jersey literally fluoresces when it describes the wealth of material at the old mines located in Andover. The rather uniform drabness of the material leads me strongly to suspect that the state geologists, after looking at countless specimens from the magnetite mines, found the occasional bright-colored minerals from Andover overwhelming by contrast. There are some jaspers there stained red by heavy hematite inclusions and some fascinating mixtures of bright iron pyrites sprinkled pepperishly in a matrix of black magnetite, but to burble about the material as a whole is not warranted.

Mr. Howard Hewitt of Paterson, N. J., states that he holds a lease on this property but is not presently working the property. His permission was granted to visit this property and another which I will soon discuss. The mine is located roughly north of Andover, N. J., and is best reached by proceeding on the main highway in that direction until a tar road turning to the right is reached, marked with signs to Lake Lenape. About a mile or so up this road a hill completely wooded is seen on the right, a woods road on the same level as the tar road plunges into the base of the hill. This road leads directly into the workings.

The Andover Iron Mines consist of several openings, extensive dumps, and all the signs of having been worked vigorously at one time judging from the enormous amount of rock removed. Straight ahead on the entry road is a tunnel leading to the bottom of a huge crater of the so-called "garnet ore" which is andradite, magnetite, hornblende, pyrites, etc., in massive blocks. To the right of the entry road are the few tunnels and long open-pit workings of the hematite ore body. It takes a morning just to tramp the grounds and peer into all the various tunnels and then after one's curiosity has been satisfied, it takes the rest of the day to inspect and collect from the dumps. I think a mineral collector would have a field-day at Andover but the cutter should approach this site with reserve.

In the dump heaps of the garnet ore mine were found the rather large chunks of pyrite-magnetite which as I have said, appear to make a fine contrasty material but I have my doubts about how well it will cut. I am quite certain that it will be difficult due to undercutting. In the hematite mines were found some true hematite jaspers of a fairly decent color. None was found in large pieces and some careful sawing will be necessary to isolate the jaspery material from the true hematite which as everyone knows is as recalcitrant as a small boy. Some very small pieces of specular hematite were also seen. Quartzite laced and beaded with grains of red and black hematite was collected also but again sits in the shop unpolished and unknown in potentialities.

Buckwheat Dumps, Franklin, N. J. —Don't Go

A minute examination on two occasions confirmed the almost total lack of anything worthwhile here for the amateur lapidary. These dumps have received the careful scrutiny of generations of mineralogists and the flowers of the mineral kingdom have long been plucked. An occasional mixture of willemite-calcite-franklinite may be found which can also be cut as a drab daylight cabachon but a startlingly beautiful one under the gentle agitation of ultra-violet. Mr. Milton Avery, the extremely capable proprietor of Garden State Minerals, showed me some of the cabs he had created out the justly famous Franklin fluorescents; under the light they were magnificent and it is for this reason alone

that the locality deserves mention. Some cutters may wish to dabble with this material on the basis of its fluorescence. As may be expected from the tremendous variations in individual hardness of the admixed minerals, the Franklin material undercuts badly.

Zeolite Amygdules at Mountain View, N. J. —Recommended, But Limited Supply

Small, almond-sized zeolite amygdules can be found in extremely limited quantities in an abandoned quarry on Alps Road, Mountain View, N. J., opposite Fernwood Lane and on the eastern side of the road. The occurrence lies in one of the typical trap sills for which New Jersey is noted. It is unfortunate that people insist upon building houses atop potentially fine collecting sites but all along Alps Road are small road cuts displaying the twisted and balled appearance of zeolite-prolific trap rock. In the little quarry mentioned the trap is made of sterner stuff and the zeolites take the form of compact amygdules. Tested on the grinding wheel, a fine chatoyancy appeared on a good proportion of the nodules. The color is white for those that are filled with radiated zeolites, possibly natrolite or pectolite. Some verge into the pale green of translucent prehnite and all are relatively fresh and unweathered. The chief interest in this material however, is the similarity between these amygdules and those found in the Great Lakes region. The latter are generally weathered or altered and display colors other than white because of it. Perhaps grubbing around the soil along this ridge may reveal nodules similarly weathered. This material will polish easily on the felt buff with cerium oxide. Small but unique.

Garnet, Graphite etc., in Bear Mountain State Park—Specimens Only

Enroute to Connecticut via the Seven Lakes Drive in Bear Mt. Park, N. Y., I noted large rock cuts for a new highway several miles before reaching Bear Mt. Inn. This region is all gneisses and schists but a view from the car showed the extensive rusty weathering characteristics of metallic ores in the western end of the cut. The car was pulled off the road and the mineral hammer broken out for a quick inspection. The rusty areas were pegmatites bearing large flakes of graphite, quartz, dark dingy green feldspar, hornblende and the limonitic remains of what was probably a pyrite. Some of the graphite looked presentable. Further along a small trap dike cut uncomformably thru the gneiss but aside from giving the host rock a hot foot, it didn't do much altering. Walking toward the east however, I noticed a light lilac-colored garnet interspersed in the gneiss. It was associated generally with quartz and biotite mica and was in poorly formed grains varying in size from quarter inch to one inch, rather minutely fractured and transparent in spots. The resemblance of this material to the rhodolite garnet of North Carolina is very strong and it is possible that it may be rhodolite. Our eminent garnet specialist, Mr. Trainer of N. Y. C., is hereby requested to examine this material and if none can be found, I have some here at home. Further along some grayish serpentine was seen in a cut which was being actively excavated by a crew of workmen. In this area were found substantial masses of pyrite and black tourmaline as well as occasional specks of green noble serpentine.

There is much fresh rock available here for examination and a jaunt to this easily accessible place may be profitable for local collectors.

Beryl at Upper Merryall, Conn. Not Recommended

The chief claim to fame of this old feldspar producing pegmatite was its ability in times past, to produce fine golden beryl along with fairly rich-colored aquamarine. It is a typical pegmatite and needs no further description along that line.

This mine is presently of considerable interest because of the published intention of Mr. Howard Hewitt of Paterson, N. J., to work this property for its gem quality minerals. In a personal visit to Mr. Hewitt prior to my visit of the workings, he declared his intentions and described the preliminary work already accomplished. This latter consists of a certain amount of bulldozing of dirt calculated to make the topmost workings of the open-cut pegmatite available for truck removal

of ore. An air compressor is in place at the mine and other associated paraphernalia but at the time of my visit in July, no holes had been bored as yet. It takes courage, time, and a wad of frogskins to start off a hard-rock proposition such as Mr. Hewitt has got hold of and I hope sincerely that we of the cutting clan will soon see a pronouncement of work in progress and rough for sale. Although Mr. Hewitt is quite alone in working this property, a tremendous handicap where just plain heavy labor is concerned, he has reached the point where a certain amount of blasting can be done immediately.

The working of this pegmatite for gem materials alone would probably be no more successful than the countless other attempts made by others in New England, however there appears to be considerable beryl of the ordinary opaque sort and with the increasing demand for beryllium, the crude ore finds a ready and remunerative sale. It is in this area that Mr. Hewitt may find his financial success rather than that of selling commercial beryl cutting rough. A certain amount of saleable mica and feldspar will also be obtainable but again the bugaboo of work on a one-man basis will severely limit quantity production.

I have avoided giving directions for reaching this mine so far, since it is an unpleasant task. Finding the property turned out to be easier said than done. However, for what it's worth bear with me as we retrace the steps involved. Our point of departure is the town of New Milford, Conn. and we go north on Route 129 which departs the town from the railroad station. This road is tar paved and we stay with it for almost seven miles at which point it butts squarely into another road crossing at right angles. We turn left down the hill on a dirt road until we reach a fork, about a quarter mile distant. Bear left on another dirt road and keep a sharp lookout on your left for a pasture which adjoins a woodland and rises steeply from the road. A wood gate bars the opening of the pasture and inside about ten feet away, is a miniature brook. Up the hillside about several hundred yards is the mine, unfortunately not visible from the road although it may be in the fall when the leaves have fallen from the trees. Mr. Hewitt had an orange-colored sign erected within view of the gate and if you spot this you can be certain you have arrived. I hope you find it, I blush to admit that I needed the help of a native.

Assuming that you have found the mine, it will be noted that the pegmatite vein mounts the hill straight up starting from a swampy area at the bottom and terminating in about a quarter of a mile almost to the top of the hill. Old dumps are on the left as you look up the hill, while more recent ones are on the right. The vein has been excavated to quite a depth but as the hill is ascended. the workings become more shallow. Near the top can be seen several abrupt steps or levels which marked the terminations of mining. The topmost level is the one that Mr. Hewitt is working on.

Several dumps were looked into as well as the debris that accumulated in the top workings, considerable crude beryl was noted and quite a bit of translucent to gemmy material which is, however, characteristically fractured to such an extent that it is useless for anything except beryllium ore. The possibilities for gem quality material are considered excellent and if this dike is worked, it is sure to produce some fine rough.

Tourmaline and Beryl at Haddam Neck, Conn.—Not Recommended

The famous Gillette Quarry was visited at Haddam Neck, permission to enter the property being graciously given by the Gillette family who still reside in a white frame house a very short distance above the workings. Only a few words will be written on this locality whose minerals have been most fully described by may authorities. If you must go to this locality please bear in mind the fact that it has been visited more times than Grant's Tomb and collecting will be mainly spiritual in nature. Nevertheless and in full expectation of disappointment, I visited Gillette Quarry, hoping like so many of us that my luck or my eyesight would

discover a prize that had unaccountably escaped the attentions of hundreds before me. I found a dump whose shattered appearance bore mute testimony of the zeal of my predecessors; I found a few voracious mosquitoes whose attacks were broken off hurriedly when they entered my citronella screen; I found a pleasant day and pleasant surroundings and finally two quarts of perspiration later, some lonely looking aquamarine fragments which could cut a one carat stone.

So it goes in the Gillette Quarry and the Schoonmaker and the others that are not actively worked, you might be lucky, certainly you might,—but don't say you were not warned.

Time didn't permit further explorations in the Nutmeg State but even in spite of the tale of woe given above, I'll get back some day and really look it over for that great big. perfect colored, flawless crystal of potofgoldite which I will stumble upon quite by accident as I stoop over to read a headline on the front page of the DAILY MIRROR carelessly discarded by a collector who brought his own lunch. This technique and also stooping to tie a shoelace are infallible though apt to be a bit tiring, but work with pick and shovel seems never to produce important finds at these old localities,—take it from me, I know.

Just one postscript, a good sledge hammer will pay for itself at any of the places mentioned in this article.

THE WHAT'S IT

(With apology to The Thing)

By FRENCH MORGAN
Washington, D. C.

While walking o'er the hills one day
With eyes glued to the ground.
I chanced to spy among the rocks
An object smooth and round.
I picked it up, gave it a whack,
When much to my surprise,
Out rolled a shiny xxx
Before my startled eyes.
Oh, out rolled a shiny xxx
Before my startled eyes.

I took it to my dearest friend—
Who's not a good rockhound;
And when I rushed into his house
To show him what I'd found.
He gave a squint, screwed up his nose,
And then let out a shout—
Get out of here with that xxx
Before I kick you out.
Oh, get out out of here with that xxx
Before I kick you out.

I turned around and walked right out,
Then took it to my wife.
Who understands my whims and faults,
Abhorring fuss and strife;
But this is what she hollered at me
As I walked in the door,
Get out of the house with that xxx
And don't bring it in no more.
Oh, get out of the house with that xxx
And don't bring it in no more.

I took it to a guy I knew
Who'd buy most anything.
His antique place was filled with wrecks
He sold for what they'd bring.
But this is what he yelled at me
As I walked in his shop;
Get out of here with that xxx
Before I call a cop.
Oh. get out of here with that xxx
Before I call a cop.

I wandered up and down the earth
The victim of man's scorn,
Until Saint Peter's gate was reached
One dark and gloomy morn.
He opened it up and hollered at me,
Hey! Come in here out of the cold!
There's desperate need for your xxx
To patch our streets of gold.
Oh, there's desperate need for your xxx
To patch our streets of gold.

The moral of this story is,
If you're out on the hills,
And find an object smooth and round
That fills your heart with thrills,
Ignore the scoffers, and hang on to it,
That's my advice to you;
For when at the gate it's that xxx
That's sure to get you through.
Oh, when at the gate it's that xxx
That's sure to get you through.

FIGHTING MOVING SAND DUNES IN UTAH

By FRANK BECKWITH

Delta, Utah

(Mr. Beckwith died June 11, 1951, of a heart ailment. He was editor of the local newspaper, and had a wonderful collection of Indian artifacts, fossils and minerals.—Editor.)

When the state road from Delta to Fillmore was laid out, on an unoccupied portion of the way, it took any direction. But as the farming area near McCornick and Holden was approached, section lines were maintained. At that time sand dunes south of the road were several hundred yards distant, and no concern was felt about them.

The general direction of the winds is from the southwest. There is a long, unbroken sweep, and in many years they get strong and forceful. In such windy summers, the sand dunes move fast.

In 1949 it was seen that the dunes near the "Sinks" were moving menacingly close to the road. Arrived the day when in strong gusts of wind. wisps of sand were blown onto the oiled highway, and it was time to begin action to stop the steady encroachment.

The Utah State Road Commission bulldozed tons of it back. Then fences were built to arrest these and pile it up. Some of these barriers are made of woven wire embedded in plastic, much like the screen door aids to keep the wind out. As no vegetation grows on the dunes, they cannot be arrested by planting shrubs or bushes on them. The country is too desert and they die for lack of sufficient moisture—rainfall about 7.58 per year.

Measurements that I conducted on the dunes near Oak City, over three years, showed that they advanced during that time at the rate of from 4 to 6 feet a year in calm summers, and more rapidly in windy seasons. In the wake of the passing sand, all plant life is withered and killed.

The dunes are crescentic in shape, the long wings extending in the direction of the wind. And at times they are beautifully wave-rippled, taking an excellent picture in a low sun to bring out the shadows. I put my face exactly at the edge to get the force of the wind-driven sand, and at times it was painful, so hard is it blown against the tender skin.

Northwest of Lynndyl a range of small mountains running east and west serve as a huge snow-fence (rather sand-fence) and the winds carrying their heavy loads of sand, meet this buffer, spend their strength in mounting it, and weakened, drop their burden on the distant side. As a result a large area behind them is filled with sand. Where not too deep, and especially on the edges, beautiful crescentic dunes are encountered. I have been around it by auto. A sheep well was drilled at one point, and we dropped pebbles in, listening closely. The water was (we estimated) about 60 feet from the top. Water there would break a long dry spell for moving sheep, coming off the winter range and going homeward to Manti and surrounding towns. This well was not very successful, and at the time of my visit, no trough for a band of sheep.

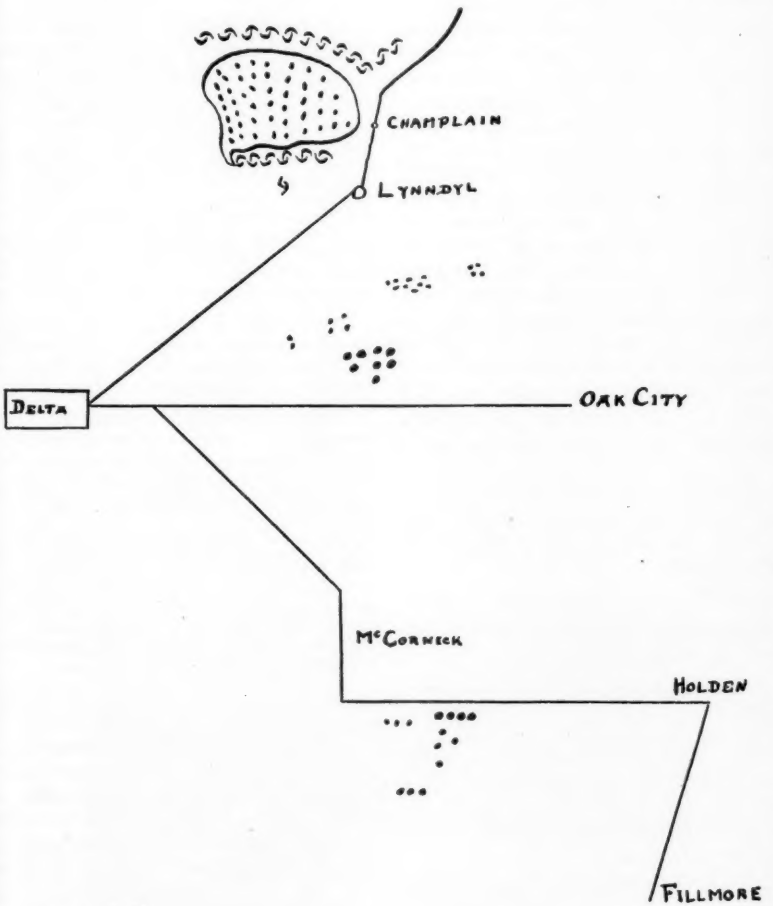
I flew over this area. So many pretty crescents were seen that I shortly ran out of film, and then of course, like in all such cases, better and better ones were in sight than those I had shot at. A Hollywood movie location scout called me up one night to inquire if a "Sahara Desert" scene could be filmed there, with mountains sometimes close, at other times far distant, and at times, no mountains to appear in the shot. I assured him that he could get all of those conditions and follow the script as it progressed.

The dunes are of all kinds of crescentic shapes; short wings, long wings; two dunes of equal strength butting into each other, neither victor; a stronger dune guilty of "piracy," stealing the show from its weaker rival.

A final word that is not related to sand dunes: May years ago I was living in Salt Lake City. One day in a high wind a

sudden rainstorm developed. When I came into the office, well drenched from it, in hours the water evaporated and film of salty dust was deposited on my hat and coat. That is, several of us tasted the film, and it either was salty or our imaginations were keen. It was wind-blown sand from the great open desert places in Millard County, whipped up and carried the hundred miles to Salt Lake City. That dust hereabouts is highly alkaline—hence the "salt" we thought we tasted.

One day of an excessive wind storm, from Delta I actually saw dust clouds west, above the distant House Range which dust was whipped up from White Valley, the next valley to our west. The House Range there is over 3,000 feet higher than the level of where the dust



Map showing dune areas (dotted) near Delta, Millard Co., Utah. (Not to scale.)

lay. That attests to the lifting force of wind, no wonder sand dunes accumulate, and move under such propelling power! On the rough sketch map in this article the sand dunes are shown as dots; large ones, large dots. Directly east from Delta, on the road to Oak City, are several, one on the south side of the road, surely to cross it in after years. More, and larger, slightly north as shown. These move about 4 to 6 feet a year in normal winds; in hard winds, they move more rapidly.

The next area is the largest in the county situated north west of Lynndyl, about opposite the railroad section house of Champlain on the Union Pacific Railroad. A range of small mountains, east and west, serve as "snow fences" and drop the sand and dust gathered over the large Pahvant Valley, behind them in a huge mass of sand, deep, and with dunes on the sides and in places, but directly behind those hills, mostly a great mass of sand, about 2-3 miles north and south by 6 or 7 miles east and west. I ran out of films in flying over this, so many are the dunes, and so engaging in interest. It is a wonderful sight.

The dunes between McCornick and Holden are the ones which are encroaching on the state highway and which are being fought. The road here adheres to section lines; when built the dunes were many hundred of yards distant. Last year wisps of sand were being blown over the oiled highway.

From Delta to Fillmore about 52 miles.

From Delta to Lynndyl 16 miles; about five miles more to Champlain.

Farming area on both sides of the road at McCornick; and in places toward Holden. South of where the dunes are shown is also farming, called "the sinks" because it is low, and sub-surface water breaks out in years of moisture. Some years, shallow lakes interspersed among the southerly dunes.

All the rest of Pahvant Valley, a soft sedimentary soil deposited by Lake Bonneville. This is dust mostly, and only in frequent spots is it slightly sandy.

The sand is all wind-blown; it hasn't been in water since Lake Bonneville disappeared. So it should have the characteristics of wind-blown sand. I notice two colors in it.

EXHIBIT TECHNIQUES

EXHIBIT TECHNIQUES—Edited by Helen Miles Davis—112 p., illus., $2.00. Science Service, Inc., 1719 N. St., N. W., Washington 6, D. C.

For those who build exhibits for science fairs and other displays, this book gives invaluable information and suggestions. There are hints for planning exhibits, working out effective panels, lettering, labeling, and planning for safe construction. Many display ideas for exhibits such as a moving platform, flashers, dioramas, illusion box, use of stroboscope for freezing motion, etc., etc., are detailed.

Over 20 descriptions of exhibits and projects that have been shown in the National Science Fair and the Science Talent Search are published to give suggestions to those who plan similar exhibits in the future.

"The science or exhibit as an adjunct to youthful participation in science as a study or a hobby has most widely developed in America," the foreword to the book states.

"Some of these are very simple, such as the showing of the projects of the members to a school's science club. Or in a large city there may be over a thousand exhibits assembled under one roof for the public to see and appreciate.

"The purpose of this collection of EXHIBIT TECHNIQUES is to bring together material that will be of aid to the prospective science exhibitor who may never have done a project and displayed it to public view. It is intended to aid teachers and club sponsors who are asked questions by their students.

"Those who will do their projects and construct their exhibits in the future will undoubtedly feel that they have done better than some of the efforts described. That is as it should be, for the future should be better than the past. There is one sure thing in science and that is that the future will be different from the past and that there will always be change.

"Exhibits and fairs, in the field of science, are important instruments in communication of scientific information. In science, you must know to show and you should show to know."

RAMBLING ABOUT ONTARIO

By BILL and MAUDE LOUBERT

1435 Marquette Street, Saginaw, Michigan

Recently we acquired the fascinating hobby of collecting rocks and in looking through Rocks and Minerals we found several articles concerning the silver mines in Northern Ontario, but it was the one in September-October, 1950 issue that really prompted us to take a trip up that way this summer.

We were taking a week for our vacation and thought that would be ample time to do some exploring as the distance was about 600 miles.

We packed our camping equipment in the car and left Saginaw early Saturday morning, crossed into Canada at Sarnia, travelled along the Lake Huron shore on K. H. 21, which is a beautiful road, stayed that night at Harrison Park Tourist Camp at Owen Sound, Ont., which is one of the finest parks it has been our privilege to camp in.

The next morning we started for North Bay on K. H. 26 to Barrie then on K. H. 11 to the home of the Dionne Quintuplets at Callendar. About 34 miles north of North Bay, the Ontario Government maintains one of its most popular camp sites on Martin River, it is situated in a pine grove and extends on both sides of the road and is a delightful spot for tent campers and trailers. There are also cabin accommodations all along the route, and if one cared to fish, there are plenty to be caught in the many lakes along the entire trip.

The next morning we started for the old silver mines in the internationally known town of Cobalt, in the middle of the town is a big sign which reads "COBALT where all the silver comes from." The town has a population of about 2240 and has one of the largest Cobalt deposits in the world, which is a very strategic mineral as it is used in the hardening of steel, treatment of cancer and many other important purposes.

We had taken the issues of ROCKS AND MINERALS containing the articles about the mines at Cobalt and showed them to some of the towns people, who were astounded to learn their town was mentioned in magazine articles. Some told us they were going to subscribe, so don't be surprised if you hear from them.

We were told to contact Mr. A. D. Hellens, who is consulting engineer and in charge of reopening most of the mines in the Cobalt area. We found him to be a most delightful person and willing to be of service to us. The next day he had Mr. Gordon Wilson, a young geologist from Hailybury, take us on a tour of the

Two scenes around Cobalt, Ontario, Canada.

whole Cobalt camp, and I might add right here it rained all day but you can believe me that did not dampen our enthusiasm one bit, it was a trip we shall never forget.

During its bonanza years, Cobalt had 44 silver mines and produced 700,000,000 ozs. of silver. High grade silver was found very near the surface and none of the shafts were very deep.

The Silver Sidewalh

Our first stop, this property produced an exceptional high grade vein of silver, a specimen from here is in the Ontario Museum at Toronto.

Kerr Lake and Crown Reserve

These two mines adjoin and most of the workings were beneath Kerr Lake. The Crown Reserve produced approximately 25,000.000 ozs. and Kerr Lake between 30 and 40,000,000 ozs. of silver. Kerr Lake was drained in the early days and all the workings were broken through to the surface and a series of pits and gaping holes make it very dangerous and almost inaccessible unless one is familiar with the ground.

These two mines have been leased by several companies over the 20 years and although no records of the silver taken are obtainable, it is understood it was quite profitable.

At the present time Penn Cobalt Silver Mines Ltd., have the lease and are again dewatering the lake and preparing to do extensive underground work to recover the cobalt and silver mill rock that has been left in the mine. This mill rock could not be processed at the old prices for silver and cobalt, but at the present time there is such a demand for cobalt, that its price has been raised. Silver at the present time is three times the price it was 10 or 15 years ago.

The draining of Kerr Lake is being done by pumping the water out through a 16 inch pipe that extends down the mine shaft about 200 feet, with a two inch pipe down the center. Compressed air is forced down the two inch pipe creating enough pressure to force the water up the 16 inch pipe, where by flume rock cut and a small creek it is carried to Glen Lake, where it continues on its natural watershed.

There was an estimated 500,000,000 gallons of water in Kerr Lake when the blower started. There is approximately 1800 gallons a minute being blown out at the present time.

At this mine we also saw a diamond drill in operation.

Cobalt Badger Silver Mines

Plans are to reopen these mines, extensive drilling has been done. These mines adjoin the Penn Cobalt, Silver Miller and Cobalt Lode. all are producing silver and cobalt ore. Several specimens were picked up here.

Cobalt silver vein at Cobalt, Ont., Canada.

Drummond Mines

We did not visit these mines, but we did visit the Drummond Memorial, which was unveiled in 1933 by the Gorvernor General in the presence of Mrs. Drummond. The monument is the old fireplace of the original Drummond cabin situated on the top of a high hill in the heart of the old silver mining camp. Mr. Drummond besides being a mine owner was a great Canadian poet.

There is still a good bit of silver rock and cobalt rock to be found on the dumps, in the early days of mining, only the high grade ore was taken and the mill rock was thrown on the dumps. During the depression years the Canadian Government allowed the people of the town to salvage this mill rock and they were paid 10 cents a pound.

A few miles further north is the heart of Canada's rich gold and copper mines. Arrangements can be made at the Chamber of Commerce at Kirkland Lake for trips through these mines, on the surface and underground. Time did not permit us to take this important tour in.

At Kirkland Lake is Canada's number one gold mine "The Kerr Addison," it has been producing gold for 13 years and shows no sign of slowing down. Last year it set a new production peak. Output exceeded $12 million and 1.58 million tons milled.

Also in the Kirkland Lake District is North America's deepest mine, the number 4 shaft at Lake Shore Mines reaches a point of almost 8,000 feet.

Some of the Minerals Collected

Cobalt slate — fine grained texture with signs of banding.
Cobalt — Heavy mineral, some pink cobalt bloom due to weathering.
Bornite — Peacock bloom, variegated colors.
Silver — Native in form of wires and leaf.
Bismuth — Native, bronze colored.
Diabase — With pink feldspar.
Silver — Mine rock.
Calcite.
Chalcopyrite.
Arsenic.

Acknowledgments

We are indeed indebted to Mr. Gordon Wilson, geologist, and Mr. Hellens for making the trip through the mining area possible, and we are very grateful.

Minerals Bring Happiness To Amputee!

Editor R &M:-

You may not remember me but I subscribed for R&M about 4 months ago. I am very happy that I made this investment as I have made several fine friends through the magazine.

You see I am a double amputee from World War II and as such I am some what handicapped. I hunted a long time for some sort of diversion and finally settled on mineral collecting as a hobby. My funds are limited to say the least and field trips are almost impossible. I sent several orders to advertised dealers in your magazine and they have been more than understanding. My heartfelt thanks to such people as Boodle Lane, Scott's Rose Quartz Co., Francis Schiller, Hank's Rocks and Minerals, Plummer's, and several others who have dug down deep in their store of generosity to start me off on my hobby. I must not forget Cal Gettings who sent me a fine group of minerals, gratis. I can scarcely tell you what this means to a person who had almost lost faith in the world. Even my wife and family have remarked about the change in me, thanks to my new hobby.

I have before me as I write this letter my copy of the Sept.-Oct. 1951 issue of R&M (25th Anniversary Number). If you are of the same caliber as the rest of the fraternity, it is easily understood why they pay you such tribute.

First I wish to offer you my personal congratulations.

Next I would like to know if you can personally or otherwise furnish me with specimens for my collection. I have set upon a 2x3—3x3 inch average size but I know quality and not quantity sometimes rules. Please let me know what you have and price.

R. P. (Bob) Lambrecht
21307 Raymond Rd.,
Maple Heights, Ohio

Oct. 26, 1951

PS: Am forming a club of fellow amputees. It will be called, Mineral Misfits.

Enjoys Trip Articles!

Editor R&M:

I enjoyed very much your account of the trip through Ohio, Indiana, and Kentucky. It, as well as the account of your trip to Mexico, was written in such a way as to make the reader feel that he was actually a member of the expedition.

J. D. Haffner
Corpus Christi, Texas

Aug. 26, 1951

PYRITE

By ROBERT D. ROOTS

3147 W. 39th Avenue, Denver 11, Colorado

Everyone likes pyrite from the small boy who calls it fool's gold to the advanced collector who studies it for its variety of crystal forms. It is found almost all over the United States though fine crystals may occur in only a few places. It is found in several forms and combination of forms, sometimes in two or more forms in the same specimen, i. e., a pyritohedron on a cube as found at Park City, Utah. I believe the cube type is the most common though the pyritohedron will run it a close second. Rarer is the octahedron, especially in fine loose crystals. Then we have figures on crystals, etchings and alterations of crystals. I will try to take these in order staying as close as I can to Colorado.

I can remember as a boy at Idaho Springs, Colorado, breaking up cubes of pyrite and galena to powder to put in layers in a bottle so we could sell them to people on the train. No doubt many good specimens went this way but pyrite was common then and not many people cared about it. Wish I had a few of them now when even the people who make ashtrays have a hard time to find it. The cause for this article may be the specimen a friend gave me this morning. It is from west of Idaho Springs and is part of an 1¼ cube with I believe a hundred or more recessed cubes forming little steps on the exposed face.

In early days while many mines produced fine crystals in Clear Creek and Gilpin Counties the best were found in the Saratoga Mine near Russell Gulch. I have gone over the three dumps of this mine without finding good groups or crystals. I did find some odd little ¼ cubes with rounded sides and a few acid-eaten crystals showing how they were being destroyed by their own acid. I did get a few specimens from this mine from other sources, one from New York and several from Helena, Montana. I believe these specimens were over 40 years old. The finest octahedron group I have seen came from the For Far Mine at Russell Gulch. There were several 2 inch crystals with smaller crystals making about a 5 lb. specimen. While several of us wanted to buy this specimen it was not for sale as the owner said there was $100.00 of gold in it. I visited the dump but found nothing in it. Crystallized gold has been found in pyrite crystals in mines near Idaho Springs. Leadville has produced many fine specimens. In the early days of radio the Ibex Mine produced many fine cubes that were used in old time crystal sets. Nowaday it seems as if the Garibaldi Mine is producing most of the fine specimens. The Ibex Mine produced many fine large crystals. One I have seen from there, while only a crystal fragment, will weigh over 4 lbs. I have one fine specimen with fine large flat crystals with a secondary growth of small crystals on the surface from R. A. M. Mine. Also the one I got in an old collection, a pyritohedron 4 inches across the top. This was, I believe, from the Maid of Erin Mine. This was something I had wanted for a long time. On the Mahala dump we found fair crystals of a cube trying to be pyritohedron and a few small groups on the nearby Greenback dump. On the Adelaide dump we found flat surfaces of small cubes and small cubes with some octahedron faces. I do not know how much of these dumps are left as it has been several years since I have seen them. At that time dumps that would cover many city blocks had been taken to the mill. A small dump that a friend had permission to take pyrite from disappeared over winter. I have seen many fine pyritohedron groups from Gilman and have had one fair group. This is a very hard mine to get anything from as the mine and mill are all underground. I found one of my best liked pyrites at the Sweet Home Mine near Alma. We had gone there looking for rhodochrosite

and were digging in the vein when I saw this specimen and broke it off. It consisted of two little, long cubes about ⅝ x ½ with beveled edges and corners, on a quartz matrix with a few small quartz crystals around it. Another mine from which very few specimens were taken is the Bright Diamond at Ouray. The reason for this is that gold was found with the pyrite and it was sent to the mill. A good massive pyrite was found at the Keystone Mine near West Cliff. On breaking open, many times fine iridescent small little crystals would be found. This dump was small and most of its pyrite went into ashtrays. I understand there is a six foot vein in the mine.

Years ago my pardner and I saw some loose cubes from the Gold Dirt Mine above Empire. We were told to go 1100 feet in a tunnel down a 200 foot shaft then back in another tunnel to a talc vein where we would find the crystals loose in the talc. We found the place all right but the mine had been abandoned, the buildings torn down and water coming out the tunnel. We did find a few crystals in the dump. Probably the largest deposit of pyrite in the state is in the St. Louis Mine at Rico. I was told there is 50,000 tons blocked out. I do know that the largest cube I have seen came from this mine. It is six inches on a side with an extra crystal on one side making that nine inches. At that time my friend and I had permission to dig in the dump and got many fine little groups. I also picked up some pieces of pyrite that had been sunburned and were a beautiful golden color all the way thru. As it is yellow, many times this has been called chalcopyrite but it is only that the heat has caused a color change in the pyrite. A new man is in charge now and I understand he will not allow getting specimens from the dump. This seems a shame as rockhounds do very little damage, if any, and there are many little specimens left in the dump that would be a source of pleasure to many people. One thing about this pyrite is that it will not stay a bright silver color, but will in a short time after cleaning show a brassy tinge. At the Santiago Mine above timberline near Argentine Pass above Georgetown, Colorado, small groups can be found here sometimes covered with a brown coating that is easily removed. This is a nice one day trip from Denver, being about 60 miles, and on getting above timberline roads will be found going all over the mountain. This was quite a mining camp at one time and had a geared railroad going to many of the mines. At present I do not know of any mines working and most of them have been shut down for many years. I have found pyrite many places in the state and used to make many trips after large crystals that did not pan out. I remember one to the Hamilton Mine near Breakenridge. After finding the road we got stuck in the middle of a corduroy fill across a small stream. This was made by the CCC boys who used tailings from the mill. This was very slick and we had to put on chains in order to back off it. We walked the rest of the way and did not get anything worth while. I have seen specimens from the Garfield Mine near Salida of small cubes in matrix and was told that they sometimes find 2 inch cubes but have never been there. I have several places where I want to go and this is one of them. Another is near Durango where the tunnel is said to be lined with bright crystals.

The only loose octahedrons I have found in the state came from a very little known locality. This is the Steve Pendergaist Mine above Rustic on the Cash la Poudre River. This mine has not been worked for several years but Steve gave me about a dozen of the crystals, one of them a 3/8 perfect bright loose crystal. The only other loose pyritohedrons I have had came from Pennsylvania.

We have one other type that I think is the rarest of all and that is the Cathedral or Gothic. This is due to the sometimes raised figures on the sides of the pyrite resembling Cathedral windows. At times the figures are etched on the crystal. Sometimes the figure comes to a sharp point, at others it may be flat across the top. My name for this is modified Gothic. The locality seems to set the type as very

rarely will you find both shapes in the same place. I have found this in many places. One a small crystal from the Longfellow Mine near Jimtown (Jamestown), and from Central City a larger crystal with a fine etched window with a flat top. But the finest of all come from the Garbutt dump in the Ibex Mine at Leadville. My friend and I went to this dump years ago. We had been hunting for several hours without finding anything to cheer about. I was first back to the car and I turned and watched him coming. He looked tired and his shoulders sagged. Then he bent down and picked up a piece of pyrite. His shoulders straightened and he was no longer tired. Neither was I when I saw what he had. A battered cube about 1½ x 2 x 1 inch. Not much to look at in the way of a cube but it had very fine windows. We worked till dark, had supper and went to bed. Looked all the next day till we had to leave for home. Finding that first piece seemed to be the charm, as after that we found many fragments. I have made five trips there and have yet to find a good crystal with good figures but maybe next time. The raised figures here are sometimes 1/16 high and one time I found the reverse cast in white quartz. I do not even know where this specimen is now.

I have had a lot of fun hunting pyrite and I think my next trip will be up to that mine near Idaho Springs to see if I can find another crystal with recessed cubes. Pyrite in some form or another is found everywhere and as a rule where ever found there is a chance for a good crystal specimen. A specimen does not have to be large, but look it over with a glass and you may be surprised.

I was going to write a little about pyrite pseudomorphs but as most of that is out of the state will leave it to another time.

REDISCOVERY OF SO-CALLED COAL IN FISSURE VEINS NEAR WEST SPRINGFIELD, MASS.

By OTTO G. BARTELS

376 Amostown Road, West Springfield, Mass.

Some time ago my attention was attracted to an arkose conglomerate boulder containing a shiny jet black mineral and calcite in a fissure. Upon searching for other occurrences, other specimens were obtained. The material was always found in small fissure veins, in Triassic rocks, associated with such minerals as quartz and barite, calcite, siderite and pyrite.

Study of the older literature disclosed two previous occurrences of what must be the same or similar minerals. Hitchcock reported bituminous coal found with calcite in true fissure veins at Midneag Falls in West Springfield. He gave an analysis listing volatile matter plus water as 22.00%, carbon as 77.97%, and ash as 0.03%. He supposed that an intrusion of trap rock formed it by distillation from a bed of coal.

Emerson reported anthracite from below the Holyoke dam in Chicopee shale of Triassic age as thick masses coating siderite. Paragenesis; siderite, mineral thought to be gypsum present as crystal cavities, barite, calcite, anthracite, and pyrite. He suggested that it was introduced into the fissure as a bitumen, because it had rounded surfaces.

My specimens correspond in all respects to the previous discoveries. Description; color jet black, in nodules having rounded surfaces, brittle, conchoidal fracture, streak black, hardness about 3½, sp. gr. 1.39-1.40, insoluble in hot HCL, very slowly oxidized when heated.

This mineral would now be placed in the class with such minerals as asphaltite, anthraxolite, and thucholite as consisting largely of carbon. Asphaltite has been found in and near fissure veins in Triassic sediments in Utah and Nevada. Asphaltite probably most nearly corresponds in properties with my mineral.

THOMAS JEFFERSON AND THE GEOLOGICAL SCIENCES

By JOEL MARTIN HALPERN

Although the man who was instrumental in framing our constitution was interested in almost all phases of human knowledge, geology and poetry were subjects about which he professed to know least. He did not think particularly highly of the theoretical aspects of geology, but in regard to mineralogy he had more interest since he considered this particular phase of geology a subject more closely allied to human needs. Despite his seemingly negative attitude his activities in the field are of great interest.

Among his most notable work in this respect was the vital part he played in establishing the United States Coast Survey (1807) which was the historic forerunner of the United States Geological Survey and the United States Coast and Geodetic Survey. Although this organization did not become very active until the 1830's the initial impetus was of great importance. As President of the United States he sponsored the famous western expedition of Lewis and Clark (1803-1806) and of Zebulon Pike (1805-1807), and he encouraged the search for minerals and fossils.

Writing in 1789 to President Willard of Harvard, Jefferson remarked, "What a field have we to signalize ourselves in. The botany of America is far from being exhausted, its mineralogy is untouched and its natural history or zoology are totally mistaken or misrepresented." He was active in many scientific societies and was for a time President of the American Philosophical Society of Philadelphia.* He also corresponded with many notables in the world of science, among them Benjamin Rush, Joseph Priestly, Thomas Cooper and Patrick Kerr Rogers. The work of these men in geology, chemistry and the other natural sciences is well known.

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* Science was more often called Natural Philosophy at that time.

Thomas Jefferson, despite the fact that he decried the theoretical aspects of geology, was very much interested in vertebrate paleontology. He is probably our only vice-president who carried fossil bones with him on his way to assume office so that he could have them identified. It seems that Jefferson was even something of a collector, for he mentions in a letter to Dr. Wiston in 1807 that General Clark had sent him a prehistoric tusk and a femur, "for a special kind of cabinet I have at Monticello."

Among Jefferson's voluminous writings is a little book called *Notes on Virginia* which he wrote for the French Ambassador. Aside from including information on the mineral and other natural resources of the state, the animals, plants and general geographical features are discussed. There are also included chapters on public finance, the local Indian tribes, militia, etc. The term "Virginia" is a bit misleading for at the time Jefferson wrote, the western boundaries of the Atlantic States were poorly defined or were non-existant; actually "Virginia" as Jefferson used it included parts of western Pennsylvania, all of West Virginia (this state split off from Virginia during the Civil War), parts of Kentucky and possibly Tennessee.

The section dealing with the mineral resources of the state discusses the occurrence of various minerals, mining, mineral springs and some of the very type of geological theorizing which he had professed to dislike. Among the mineral resources of the area he included isinglass (mica) found in several localities, loadstone (magnetic iron oxide), asbestos ("of ligneous texture"). chalk, and ochres (iron oxides). For Bedford County he states, "Some of the earth is believed to be gypseous" i. e. contains gypsum. He also mentions deposits of gold, lead, copper, coal, iron, marble, limestone, amethysts and fossilized marine shells

In regard to the coal deposits in Penn-

sylvania he prophetically notes, "The coal at Pittsburgh is of very superior quality. A bed of it at that place has been a-fire since the year 1765." Concerning gems Jefferson is skeptical of valuable deposits in the area, for he writes, "I have known of one instance of an emerald found in this country. Amethysts have been frequent . . . yet not in such numbers, any of them, as to be worth seeking."

Jefferson must have taken a personal interest in mining; in commenting on the operations of a particular lead mine he suggests that the pounding mill and the furnace be on the same side of the river in order to increase the efficiency of the procedures. Some idea of the scope of mining operations in 18th Century America is revealed by the fact that this mine produced twenty to twenty-five tons of lead a year and employed thirty laborers. The ore and later the refined product were transported by canoe and wagon.

The finding of fossilized marine shells posed problems to Jefferson as it had to other thinking men since the time of Leonardo Da Vinci and even earlier. He mentions fossil shells being found in the Andes in South America at a height of 15,000 feet. Although some had cited this as proof of a universal deluge, Jefferson disagrees by saying, "If the whole contents of the atmosphere then were water instead of what they are, it would cover the globe but thirty-five feet deep." Discussing the pro and con aspects of this dispute and citing Voltaire's disbelief in the "Universal Deluge" Jefferson concludes, "These hypotheses are equally unsatisfactory (Voltaire's and his opponents), and we must be content to acknowledge that this great phenomenon is as yet unsolved."

He also was interested in describing certain sulphur springs: "The matter with which these waters is allied is very volatile; its smell indicates it to be sulphurous as also does the circumstance of its turning silver to black. They relieve rheumatisms. Other complaints also of very different natures have been removed or lessened by them." These may have been the famous White Sulfur Springs now the site of a popular resort in West Virginia.

Jefferson also described Virginia's famous Natural Bridge (he owned the Bridge and the area surrunding it and built a guest house there), inquired into the deposits of saltpetre for the manufacture of gunpowder and described some of the limestone caves of the area.

In writing to Dr. John P. Emmett in 1826. he sums up his views on the subject:

"To learn . . . the ordinary arrangement of the different strata of minerals in the earth, to know from their habitual collocations (arrangements) and proximities where we find one mineral, where another, for which we are seeking, may be expected to be in its neighborhood, is useful. But the dreams about the modes of creation, enquires whether our globe has been formed by the agency of fire or water, how many millions of years it has cost Vulcan or Neptune to produce what the fiat of the Creator would effect by a single act of will, is too idle to be worth a single hour of anyman's life."

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Shows His Appreciation!

Editor R&M:

How best to show our appreciation of your efforts in our behalf—it is by renewing our subscriptions promptly! I for one look forward with great anticipation to the arrival of each issue.

N. A. Knotter
Ursina, Penn.

Oct. 24, 1951

Wears Out Each Number!

Editor R&M:

Want to tell you how much I enjoy your magazine. The only thing wrong is, it doesn't come out often enough. Wish it was at least a monthly. I wear one number out before the next one arrives.

J. R. Messamore
Colby, Kansas

Oct. 18, 1951

NEWARK MINERALOGICAL SOCIETY'S 4-DAY COLLECTING TRIP TO VERMONT AND NEW HAMPSHIRE

By W. H. HAYES

35 — 22nd Street, Irvington, N. J.

The inception of this trip really began in the late winter of 1951 through the writer's correspondence and exchange of minerals with a collector in Vermont. As the exchanges showed that worthwhile mineral specimens were available for the going after, the desire to collect them first hand crystallized into action. So. when the suggestion was made to our members and also to the Vermont correspondent that a Society trip be made to northern New England, it was received with enthusiasm by all concerned. Our correspondent, Russell H. Leitch, of Springfield, Vermont, wrote that he would be pleased to guide us to mines and quarries where collecting could be done, and would make arrangements with property owners, would lay out an itinerary of daily trips and would also make arrangements for living accommodations for our crowd. This he did with despatch and efficiency so that a party of strangers needed only to contact their friend and leader to find that instead of going blind to a strange land we were received very cordially by Russell and his parents, Mr. and Mrs. George Leitch, at their home at 14 Harvard St. Springfield, and thereafter conducted here and there with no wasted energy trying to get located aright. For this reception we are everlastingly grateful and appreciative.

There were four cars assembled at Newark Museum for the start of the trip at 7:00 A. M., July 30, 1951. An uneventful run of the 265 miles to Springfield, Vt., was completed at 3:30 P. M. at the home of Mr. Leitch, where the members who were vacationing in other parts met with us. After greetings and introductions we were escorted to Vail's Motor Court, west of Chester, Vt., where we took over all the units of the Court as well as camping facilities for two families. Here again we were received very cordially, and the accommodations were ideal. The complete assembly showed twenty-five adults and six children.

During the first few evenings the time was spent looking through "Russ's" collection and exchanging numerous New Jersey specimens for the local northern New England species.

Our collecting began on July 31st., when we were led to the Ruggles mine at Grafton Center, N. H. Permission had been granted, as is necessary at this mine, by the Superintendent, Mr. Alexander, for our collecting in the extensive dumps surrounding the deep mine. As we lined up for pictures there were 30 of us. Then to work on the dumps! There was no stopping these collectors excepting when their appetites compelled them to resort to lunch to renew their energy; 5 P. M. was quitting time, so we returned the 65 miles to Chester.

On Wednesday, August 1st, our first objective was a gorge in South Newfane, Vt. Here we were stopped temporarily by a hard thunder shower at about 11 A. M. so to make the best of the situation we ate our lunch in our cars while the rain beat on their roofs. Just after the shower passed we went about a half-mile through wet weeds and trees to the gorge, and it really is appropriately named. We had to hang onto trees and bushes to get to the river edge. The ladies of our party would not be stumped by any such obstacles as rocks, water, slippery moss, heavy bags, etc., but went through gamely despite one barked skin and a badly bruised knee. Compliments are due them for completing that rigorous collecting trip. To complete this day's trip we headed back to Chester while a cool breeze came up and the sky cleared beautifully. A hold-up occurred when we caught up to a herd of cattle going in for milking that filled the road and kept a pace of a slow 2 to 3 miles per hour for a half-mile or so. But

we arrived at our destination, the Chester talc mine, in time to spend several hours at this well-known mine. By this time it was cool and windy, but no matter, we were collectors. This night at ten o'clock when the air was perfectly clear we were treated to a fine view of Aurora Borealis, and millions of stars directly overhead. What with the difficulties to be overcome, the beauties of the woods and streams, the wild flowers and the displays in the heavens this was a day of demonstration of our Creator's manifold works in the universe.

Westmoreland, N. H., was our fourth place of call on the itinerary. At the Leonard farm we parked our cars all over the place while we hit a rather blind trail across a valley through the woods to an old fluorite mine on a high hill to the west of Leonard's. After a hearty lunch we went to a more recently operated fluorite mine about 3 miles from Leonard's. This was not productive of results so back to Chester we went.

A long trip to the Palermo mine at North Groton, N. H., was on the schedule for Friday, August 3rd. By this time several of the party had decided that they would seek other fields or would continue on with plans already made, so that the 70 miles to the Palermo mine was taken by only seven collectors; including of course our leader, without whom we would have had to inquire for and hunt for our destination. The weather was cloudy and promised rain which by 5 o'clock had made good its threat, but by then we were satisfied to leave as our bags were well loaded and we had visions of a good meal on the way back to Chester. To those who read this and want really excellent food at reasonable prices when traversing Connecticut Valley the place to get it is at Cinderella's Spa, as we did, and it is on the west side of the main street of Windsor, Vt. The close of this day ended the four days of thoroughly interesting and prolific collecting. Those few of us who were left when Saturday, August 4th arrived, sorted and packed our belongings and set out for home.

Without a recapitulation of the minerals collected this story would be quite incomplete so here are the results.

At the Ruggles mine five collectors dug up specimens of combined autunite and uranophane which measured from 6 x 6 inches to 6 x 10 inches, and these are tops to behold, either in daylight or under a Mineralight. Many smaller specimens of these same kind were found, with a little associated torbernite and gummite. Fluorapatite occurs here too, and in other parts of the dumps a small amount of graftonite, montmorillonite and beryl were gotten, also some triphylite.

The South Newfane gorge produced light green chrysoprase, sometimes coated by clear drusy quartz crystals; pale green picrolite, garnierite in pale green color and onyx of mediocre quality. We heard a report of gold being found in the gorge but two pannings of gravel from the stream failed to show any.

At the Chester talc mine there is plenty of dump material to work on and we were able to collect magnetite octahedrons in prochlorite which, by the way, are the best when not associated with pyrite. Nice pyrite of cubical form was found in both talc and prochlorite with now and then distorted crystals in talc. Masses of foliated talc were common as well as large groups of crystallized dark green actinolite bundles, usually radiated. A scarce item here was ankerite which occurred as gray cleavages associated with talc. Still rarer was one small crystal of magnesite.

The Westmoreland fluorite mine is located on a steep hillside but out of its dump we dug fluorite in cleavages and a few of the rare natural octahedral crystals. Here the fluorite is quite clear and is found in colors from nearly colorless to a medium bright green. All of this fluoresces a nice blue under long wave ultra violet light. At the second fluorite locality mentioned above the mineral is a pale green to almost white, with very slight fluorescence. Here was also found groups and bunches of small but nicely formed quartz crystals, and very small bits of malachite.

Newark Mineralogical Society field trip to the Ruggles mine, Grafton, N. H., July 31, 1951. In the photo are: 1—Shulman, 2—White, 3—Major, 4—Dresser, 5—Bailey, 6—Farley, 7—Lum, 8—Morgan, 9—Mrs. Lum, 10—Talamini, 11—Mrs. Thorne, 12—Mrs. Dalle Valle, 13—George Leitch, 14—Antisell, 15—Washko, 16—Russ Leitch, 17—Hayes, 18—Sylvia Lum, 19—Dresser, Jr., 20—Mrs. Dresser, 21—Susan Lum, 22—Dick Vail, 23—Giordano, 24—Dresser, Jr., 25—Kellinghausen, 26—Washko, Jr., 27—Mrs. Sherlock, 28—Mrs. Washko, 29—Miss Carpenter, 30—Thorne, Jr.

Photo by Mrs. Peter Farley

At the now idle Palermo mine our hunting brought forth a variety of species, such as heterosite, also called purpurite, massive citrine, beryl of a yellowish color, as well as triphylite, massive and grayish blue. On the quarry wall at one spot there occurs a large vein of muscovite wherein the plates are criss-crossed in every direction and the interstices are filled with montmorillonite and autunite which is made very attractive by the fluorescence of the autunite. Some of the massive montmorillonite is impregnated with autunite and this also is a beautiful sight with ultra violet light.

Two other localities from which we received specimens were Windham and Gassetts, Vt. The former produced very fine gemmy translucent talc, sometimes associated with altered dolomite. Its bright green color makes it very attractive. The latter locality gave us small dark garnets and staurolite in schist and medium almandite garnets in a light brown schist.

So ends a highlight in the mineral collecting of the Newark Mineralogical Society.

OHIO GEOLOGICAL SURVEY COOPERATES WITH MINERAL COLLECTORS!

Our Division Chief, John H. Melvin, has assigned me to a long awaited project. It is to become acquainted with the mineral and rock collectors of our state, meet them personally, visit their organizations and explore the ways in which we may be of use to them and to further their interests and their hobby. What we may do for them, or what they may do for the Division of Geological Survey, should be of mutual benefit and large satisfaction. To accomplish this project well, will be the greater part of my duties for some time to come.

I start from scratch. Feeling certain that your magazine reaches many of the collectors and their organizations in our state. I address my problem to you first. Who are some of the "Rockhounds" upon whom to make our first calls? Or probably I should ask—Who are the officers of some of the various amateur clubs or societies of mineral collectors? This is quite a question I will agree. But it is the best one I can think of! If you are puzzled at this point, so am I. How many of your readers in this State know we exist or what we do? The first Ohio Geological Survey Report is dated 1838! It is time a remedy be applied. Amateurs contribute endlessly to all sciences, and none better than to geology and mineralogy.

Parenthetically I will insert a paragraph right here.

This year I was in charge of our Division's exhibit at our State Fair. Watching more than a quarter of a million persons pause before it for a moment or for many moments, it dawned on me that here was SOMETHING. Why not find ourselves next year right there with a collection of Ohio's minerals, collectors choice exhibits, and live lapidary amateurs at work? Now that would reach a long way.

Your reply will be much appreciated, your questions answered, and any information you give me will be used in the proper manner you would expect.

Walter C. Brown
618 W. North St.
Sept. 14, 1951 Piqua, Ohio

Editor's Note:—As far as is known to us, this is the first time that a state geological survey has offered to cooperate with mineral collectors in the way the Ohio Division of Geological Survey is now doing.

All Ohio collectors and clubs should be registered with the Survey. Contact Mr. Brown directly, at his home address, 618 W. North St., Piqua, Ohio. Mineral collecting in Ohio should now advance by leaps and bounds.

JOHN C. POHL, Jr., 77, DIES

WIDELY KNOWN AS MINERAL COLLECTOR

John Charles Pohl, Jr., 77, a retired employee of the Lehigh Valley Railroad, was found dead about 7 o'clock this morning, Tues. Oct. 30, 1951, at his home, 204 North 10th Street, Easton, Pa.

The discovery was made by a neighbor. Dr. D. F. Bachman, Northampton County coroner, said that Mr. Pohl succumbed late Monday of a heart attack. Easton police also investigated.

A lifelong Easton resident, Mr. Pohl was born Feb. 19, 1874, a son of the late John C. and Ida Reed Pohl. He was for many years head of the pattern department at the Lehigh Valley Railroad shops in Easton, retiring several years ago.

Mr. Pohl, who became interested in mineralogy a number of years ago was known widely for his mineral collection which often has been described as one of the finest in the United States. He had several thousand specimens at his home which were viewed by many groups and he wrote articles in a number of scientific magazines on his discoveries, most of them in this area.

Members of the geology department at Lafayette College said today that mineralogists all over the country have recognized that Mr. Pohl has done a great deal to further interest in mineralogy among the general public.

He was interested in the work of the geology department at Lafayette and recently was elected an honorary member of the John Markle Society and the Geology Club at the college. He was a member of a number of national mineralogy societies among which are the New York Mineralogical Society and the Rocks and Minerals Association.

Only today some of the finest specimens he had collected were placed on exhibition in Markle Hall on the Lafayette college campus in Easton.

Mr. Pohl was a member of the First Presbyterian Church, and was active in the affairs of the Northampton County Historical and Genealogical Society.

JOHN C. POHL, Jr.

His only immediate survivor is a cousin, Dr. H. C. Pohl, a Nazareth physician. A sister, Miss Elizabeth Pohl, former Easton teacher, principal and director of elementary education was killed on April 5, 1938 when she was struck by an automobile at 10th and Northampton streets.

A bronze plaque honoring Miss Pohl was presented to the Easton School District by Mr. Pohl in November, 1949.

—Easton Express,
Easton, Pa.
Tues., Oct. 30, 1951

Bus Ride Is Too Short!

Editor R&M:

I am enclosing a check for a year's subscription plus some back numbers.

I have borrowed your magazine (May-June 1951) from a friend and read it twice carefully, going and coming on a bus to New York City. For once the bus ride was much too short!

Mrs. Marina Navrotsky
Kew Garden Hills, N. Y.

Sept. 5, 1951

WORLD NEWS ON MINERAL OCCURRENCES

Items on new finds wanted. Please send them in.

ALABAMA — Rose colored jaspers have been found in the quartzite ridges near Sylacauga, Talladega Co., Ala.

ARIZONA—The old Yuma mine, famous for its wonderful specimens of vanadinite and wulfenite, is located in Pima County, Ariz., about 15 miles N.W. of Tucson. Although abandoned for years, it still can furnish nice specimens as a letter attests to this, which was recently received from David S. Smith, 25 Calle Belleza El Encanto, Tucson, Ariz. Writes Mr. Smith:

"I am sending some wulfenite xls from the old Yuma mine in the Tucson Mts. These xls range anywhere from 1/16 to 1½ inches in size and occur in beautiful orange to orange-brown colors. In a space of about 4 hours, by hard work and sore fingers, I obtained 5 cabinet and about 200 single specimens, mostly single xls. This mine quit working about 1920 and was mainly a gold, silver, and lead mine."

ARKANSAS—Billy Laughlin, Clinton, Md., spent the past summer in Arkansas. While there he visited the world-famous Magnet Cove locality at Magnet, Hot Springs Co., Ark. A letter from him, dated Sun., July 29, 1951, reads:

"I visited Magnet Cove last Sunday and had poor luck. Much of the Cove is grown up with brush and most of the mineral deposits are fenced in. I managed, however, to get specimens of calcite, biotite, protovermiculite, perovskite, aegirite and some pyrite. These were all from under and around the Cove Creek bridge. I was unable to enter the titanium mine, so did not get any rutile. I finally was able to get some sand for you. It is from Cove Creek and I am afraid it is not too good."

A fine article on this locality appeared in the June, 1948, R&M. It is "Mineral collecting in Magnet Cove, Arkansas," by Woodland G. Shockley (pp. 483-495, with a map showing best collecting areas).

CALIFORNIA—An amazingly large number of fine gem quality kunzite (130 lbs. to be exact) was found on July 3, 1951, by George A. Ashley, Pala, Calif., at his Vanderberg mine. A letter from Mr. Ashley, dated Aug. 6, 1951, reads:

Part of kunzite from pocket found July 3, 1951, by George A. Ashley in his Vanderberg mine at Pala, San Diego Co., California. The kunzite is of exceptionally fine color.

"Here is a little information concerning the Vanderberg mine. It was discovered in 1902 by Fred M. Sickler on Hiriart Mountain near Pala. Sickler was the first man to discover kunzite, finding it first at the Katerina mine, also on Hiriart Mountain. The Vanderberg mine yielded the famous "Pala Princess" a 24 ounce, flawless kunzite of very fine color; its picture is to be seen in several of the early California mining bulletins.

"Although the Vanderberg is an old gem mine, it has been worked but very little due to its inaccessible location. It came into my possession along with several other gem mines, 4 years ago when I bought out Sickler. Last year I had a road built to it and started to do some real mining there early in June of this year. I found a pocket that yielded 130 lbs. of kunzite, as shown in the photo, on July 3rd.

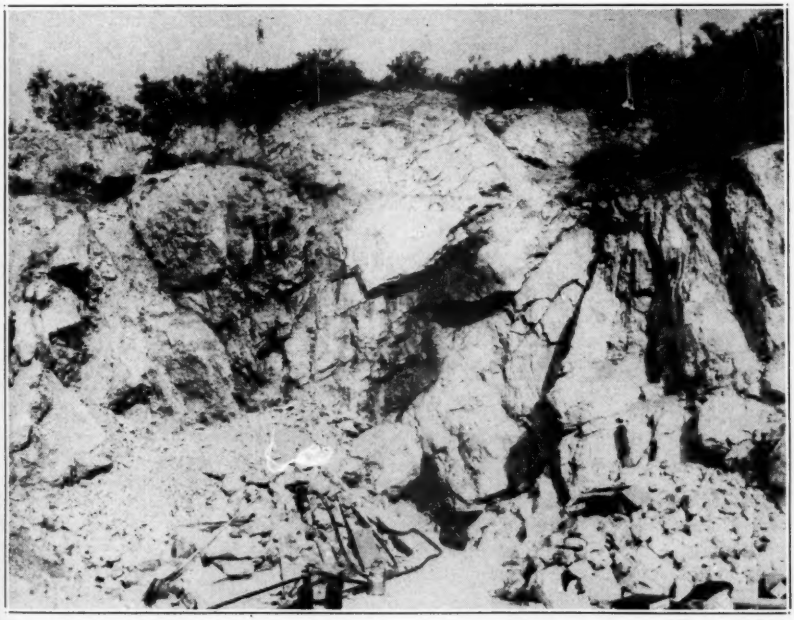
"The Vanderberg mine is essentially a kunzite mine but producing an occasional peach color beryl of gem quality and a few apatite crystals."

A most interesting report "Gem and Lithium-bearing pegmatites of the Pala district, San Diego County, California" has just been released by the Division of Mines, Ferry Building, San Francisco 11, Calif. It contains 72 pages, 13 plates (7 in color), 35 figures, Price $2.50.

COLORADO—We are indebted to Prof. Richard Pearl, Dept. of Geology, Colorado College, Colorado Springs, Colo., for a very fine specimen of wire silver. His letter, dated Aug. 19, 1951, reads:

"A little specimen of wire silver for which the famous Mollie Gibson mine is noted, has been sent you with my good wishes. This is one of the outstanding mines of Colorado history; from it has been taken a large amount of wire silver, as well as enormous masses of nearly pure silver, one weighing 1840 pounds."

The Mollie Gibson mine is in Aspen, Pitkin Co., Colo.



Vanderberg mine at Pala, San Diego Co., California now operated by George A. Ashley.

Very handsome specimens of snow-white, lustrous, compact fibrous pectolite, have been found by R. W. Olsen, Glenwood Springs, Colo. A beautiful specimen, 3x4 inches in size, was sent in by Mr. Olsen, and a letter from him, dated Sept. 5, 1951, reads in part as follows:

"The specimen comes from near Glenwood Springs, Garfield County, Colorado.

"We find this pectolite high on a cliff in a sort of crevice in the rock. You have to be part mountain goat to get it out. It has to be carried over and down rock slides to a sort of trail. Then you have to walk about two miles to your car. There may be more in this territory but as yet we haven't found it."

CONNECTICUT—A new find of sillimanite, top quality, feather-like, rare form, is reported by W. H. Hayes, 35-22nd St., Irvington 11, N. J. The locality is Bethlehem, Litchfield Co., Conn. A beautiful specimen consisting of sparkling silver-gray sillimanite associated with microcline and muscovite, was sent R&M by Mr. Hayes.

DELAWARE—Kyanite was once reported from Kennett Turnpike, near Centreville, New Castle Co., Del. Does any reader know of the occurrence?

FLORIDA—Loose, grayish, opalized shark's teeth have been found with collophanite pebbles at Brewster, Polk Co., Fla.

GEORGIA—From an item in the July-August, 1951, Georgia Mineral Society NEWS LETTER (Dr. A. S. Furcron, Editor, 425 State Capitol, Atlanta 3, Ga.) we learn that radioactive garnet has been found at Young Harris, Towns Co., Ga. The garnet is dark red, massive, probably spessartite as it contains manganese, and outcrops on the side of a mountain.

IDAHO—Amethyst xls have been found lining chalcedony geodes which are found along Pole Creek in Blaine Co., Idaho.

ILLINOIS—We are indebted to F. L. Fleener, 1415 Hosmer St., Joliet, Ill., for the following interesting item, dated July 23, 1951:

"The old magazine is still holding its ground, and, if anything, getting better as time passes. The recent introduction of the "World News" is a most pleasing innovation. I literally study it from end to end and the information that I glean from it keeps me busy making additions to my Mineral Notes for two to three weeks. I hope that your subscribers and friends will keep you busy and support that feature.

"Just six miles north from Morris, Grundy Co., Ill., is a little crossroads village of Central. It consists of several houses, a general store, and a STONE QUARRY. This quarry is operated by the Morris Stone Company and they produce a high quality of agricultural lime.

"The quarry is in the upper members of the Ordovician series and some portions of the strata are about 98% $CaCO_3$. Interspersed between these limey strata are to be seen layers that appear mottled; an investigation of the mottles shows them to be dolomite while the lighter portions are almost pure limestone. This condition has inspired some university students to write their theses on the subject of dolomitization. Splendid crystals of calcite may be gathered most anywhere in the quarry. The limestone quarries in this region frequently blast into old solution pits, etc., that are filled with a clay-like substance, and the Central quarry has opened several. Some of these contain fine crystals of sphalerite, marcasite groups, some with excellent examples of the spearhead twinning. One such group was about two inches in diameter, literally studded with the spearhead crystals. I never saw anything like it before. Unfortunately your old friend was not the lucky finder. There are so many things to be found in this one quarry that I have visited it repeatedly and never came home without something new and worthwhile."

Paul N. Caravetta, 2923 W. Armitage, Chicago 47, Ill., informs us that:

"The septaria from the Wilmington

strip mines (bituminous coal) near Coal City, Grundy Co., Ill., have a golden fluorescence which I believe is more colorful than that of the Kansas septaria.

"Ferns are common fossils at the Wilmington strip mines. With a little luck one can find also crabs, worms, spiders, clams, shrimps and parts of fish."

A nice 4x5 specimen was donated by Mr. Caravetta. It consists of xline smoky gray calcite filling cracks in the dark gray septarium. It is the calcite which fluoresces.

INDIANA—Robert E. Riecker, 9709 S. Prospect Ave., Chicago 43, Ill., sends in the following note:

"In the well known fossil region of Indiana at McCormick Creek State Park, near Spencer, Ind., are found: flint concretions, fossil coral (horn and straight types), geodes of all kinds, etc. It is alright to pick up specimens, but it is against the law to loosen specimens from the bed rock."

IOWA—Small pebbles of basalt with amygdules filled with greenish epidote, have been found by Mrs. Frank Krogmeier, RR2, Ft. Madison, Iowa. The locality is their farm in southeastern Iowa near Ft. Madison, Lee Co.

KANSAS—From Mrs. Orlin C. Baker, 1515 Stone St., Great Bend, Kans., comes the following interesting item, dated July 30, 1951:

"Last September (1950) you wrote me enquiring if I had examined the Arkansas River in our city for minerals. I had planned to write you long ere this in answer, but the year has been a full one for me.

"About the Arkansas, I happened to remember some lines about stones from our vicinity of which Orlin has made into sets except the sandstone (in his lapidary workshop). I wrote the lines for a Christmas card one year. Hope they will give you an idea of what we find along the river:

A KANSAS RIVER'S BRIM
(To O.C.B.)

Just stones drifted along the stream-bed,
I supposed,
If I noticed the stones at all,
And passed on.

But another stooped there and saw beauty revealed
In the fragments of flint, of fantastic design,
Salmon feldspar with satiny light,
And brown, sparkling sandstone,
Ochre granite bedappled by green,
Lilac quartz in chalcedony frame,
Smooth round pebbles, as clear as dewdrops,
Bits of jasper of ebony hue,
Storm-gray agate, fired with a turbulent red:
Miracles gathering through the ages.

M.O.B.

Drusy quartz, consisting of tiny yellowish xls in a reddish massive quartz, has been found along the Solomon River in Solomon, Dickinson Co., Kans., by Mrs. John McCarty, 5824 E. 12th St., Kansas City 3, Mo.

KENTUCKY — Nice specimens of bluish-gray chert have been found near Linwood, Hart Co., Ky., (not far from the Mammoth Onyx Cave) by Mrs. Flora Shufelt, RFD 1, Binghamton, N. Y.

"I got them from a cut that was made for a road. Most of the chert was blue or nearly so; some were very light and some a darker blue," she writes.

LOUISIANA—A mineral sulfur discovery considered large enough to end the world shortage in this basic material by 1953 was announced in New York on Aug. 22 by the Freeport Sulphur Co. The new deposit, contained in a large salt dome, is in the marsh land of the Mississippi River delta, 100 miles southeast of New Orleans (at Garden Island Bay, Plaquemines Parish, La.) and will yield about 500,000 tons annually to the native sulfur supply.—*Chemical & Engineering News*, Sept. 3, 1951. (We are indebted to Howard V. Hamilton, Vandergrift, Pa., for this item).

MAINE—The following letter, dated Sept. 20, 1951, is from William Hinckley, RFD 3, South Brewer, Maine.

"All my family has found a great deal of pleasure since we took up collecting minerals a year ago. However, as Maine natives, we got quite a jolt last July 6th when, on our first trip to Plumbago Mt. in Newry, Oxford Co., Me., we discovered that apparently many collectors come long distances from other states and then fail to reach the old quarry at the top, but stop a few hundred feet short of their goal at the more recent feldspar mine. That day parties from Michigan, Ohio, Virginia, and Massachusetts went only to the feldspar mine and went away greatly disappointed. My sense of Maine hospitality leads me to urge you to find some way to pass on the information thru R&M that one should go on to the *top;* one can still find much of interest there in the old dumps."

MARYLAND—Small brown tourmaline xls have been found in coarse xline limestone at the Campbell limestone quarry, Texas, Baltimore Co., Md.

MASSACHUSETTS — A very fine specimen of crumpled graphite schist, dark gray in color, 6x6x½ inch thick, has been donated by Stanley Goding, Box 815, Springfield, Vt., when he and Mrs. Goding called at the office of R&M on Sept. 18, 1951. The locality is a farm near Northfield, Franklin Co., Mass.

"The owners of the farm are very nice. They not only gave us permission to visit the locality, giving directions, but on our return they invited us into the house to wash our hands stating that handling graphite does get one dirty. Unfortunately, I do not recall their names," he told us.

MICHIGAN—Native silver, as small lustrous flakes and sheets in white xline calcite, has been found in the Quincy copper mine at Hancock, Houghton Co., Mich.

MINNESOTA — Dark gray fossil corals have been found in the limestone at St. Paul, Ramsey Co., Minn.

MISSISSIPPI—Large deposits of limonite (bog iron ore) are found in Chickasaw County, west of Houston, Miss. Bog iron ore is often cellulor, having a worm-eaten appearance like rotten wood.

MISSOURI—Interesting specimens of sugary quartz (white rounded masses, resembling nodules and consisting of tiny colorless quartz grains) have been found by Mrs. John McCarty, 5824 E. 12th St., Kansas City 3, Mo. The locality is the Roaring River State Park, Barry Co., Mo. A letter from her, dated Sept. 1, 1951, reads in part:

"In case you have never been there, Roaring River State Park is a very beautiful place in south Missouri about 14 miles from Arkansas and about 60 miles from the Tri-State mining district. The park is one of the State's trout hatcheries. Roaring River comes out of a cave in a mountain. At one time it came out with a terrific roar—now it is just a mild "roar" that sounds like a real heavy rain (wonderful music to sleep to)."

MONTANA—Nice red jasper containing small black flakes of hematite are found at Basin, Jefferson Co., Mont.

NEBRASKA—Fibrous crusts of aragonite have been found in joints of limestone in the limestone quarries near Roca, Lancaster Co., Nebr.

NEVADA—The Baxter fluorite mine in Broken Hills, Mineral Co., Nev., is reported to contain the largest deposit of high-grade fluorite in the United States. The mine is opened by shafts.

NEW HAMPSHIRE—An interesting find was made not long ago by Mrs. Ruth Wentworth, 135 Maine Ave., Portland 5, Me. At Hampton Beach, Rockingham Co., N. H., she picked up a 4x4 inch dark red quartzite boulder, which, when struck with a hammer, broke in two with smooth faces. The smooth faces were gray in color and contained many tiny masses of lustrous pyrite. Hampton Beach, on the Atlantic Ocean, is New Hampshire's most popular beach.

NEW JERSEY—Robert K. Greenwood, 132 State St., Elmer, N. J., was a recent visitor to the beach at Cape May, Cape May Co., N. J., where he collected a number of transparent quartz pebbles (Cape May "diamonds"). His letter, dated Sept. 18, 1951, reads as follows:

"Yesterday I happened to be on the Cape May beach, and with a few friends who are interested in minerals, we spent about two hours looking for the so-called diamonds. There are plenty of them of a small size, but very few of the size that would make cabochons. However we did find several that we intend to grind and polish as soon as we get our equipment set up.

"While seeking the stones one of our party picked up a small quartz crystal which I am enclosing along with a few of the "diamonds". This find of the crystal brought us much interest, and we are now wondering if the rounded stones at one time were parts of actual quartz crystals shaped up by the sea. It was quite a surprise to us that a real crystal should be found on the beach. Do you happen to know whether it is common for such crystals to be found on beaches? Even though it is very small it seems to indicate that somewhere, perhaps under the seas, the crystals are picked up and washed to shore, but it had never occurred to us that the "dimonds" were ever parts of real crystals. Any thought you have to offer on this will be much appreciated."

Many pebbles found on beaches were once crystals. If they have traveled long distances, or if found on a rocky beach where huge waves are constantly agitating them, the crystals may lose all semblance of their crystal forms and become smooth rounded pebbles. It is quite common, however, to find pebbles still showing crystal faces, and at times, nice faces, too.

Dover, N. J., July 14, 1951—Alan Wood Steel Co. is installing a new mine hoist in its Scrub Oaks mine near here which is capable of lifting 18,000 pounds of iron ore every two minutes from the bottom of its 3,840 foot shaft, the company announced today. (Item sent in by Raymond Conover of Stone Ridge, N.Y.)

In 1920 the Editor of R&M was the mining engineer for the Eastern Mines Development Co. which at that time was sinking an inclined shaft at the Scrub Oaks mine. The ore is magnetite but unfortunately we never found any minerals that would be of interest to a collector. The Scrub Oaks mine is at Mine Hill, near Dover, Morris Co., N. J.

NEW MEXICO—Mrs. G. D. Wiebe, 310 Beach Ave., Mamaroneck, N. Y., has an idea which we heartily endorse. Whenever she goes on a long trip, notes are taken which on returning home are enlarged into a "family letter" and a number of copies made for distribution among relatives and friends. This past summer a trip was made, by plane, which took her to Ohio, Oklahoma, Colorado, New Mexico and other states. The "family letter" that resulted comprised 17 typewritten sheets and one copy was sent R&M because of its several items relating to mineral localities. One reference was to Taos, New Mexico, and the Harding mine at Dixon, as follows:

"This high valley where Taos rests is over 7,000 feet above sea level and there is rain at least once a day. (p. 12).

"Wednesday: We got up reasonably early and headed toward Dixon and the Harding mine to which I had been directed by Peter Zodac (Editor of ROCKS AND MINERALS); his friend, Mr. Arthur Montgomery is the mine's manager. What a ride! Remember, we were already up 7,000 feet. We climbed for about 10 miles, climbing so fast that at one point we had to wait until the engine stopped boiling. The road was gravelled and not too smooth and far from wide enough to give one a sense of security. Usually there was a rocky wall on our right and a swift rocky descent on the left. When we branched off the main road and onto the mine's own road, we began to think that the road we had left was a good one for at least we could have passed an-

other car at some places. On the little road there was never room to pass and we couldn't see, at some places, even a car's length ahead. When we rounded the last curve, Bill said, "Well, there's a truck, at least we can turn around."

"Mr. Montgomery wasn't there yet but the Mexican (I think) who seemed to be in charge made us welcome to look around and to pick up samples. Unfortunately I didn't stay to hear what else he said, and Bill was the only one to hear the magic word "beryl". (Beryl includes emeralds and aquamarines. There was some confusion, anyway, because I'd been thinking it was supposed to be a copper mine and the foreman said it was a "Bistterite" mine. I'm not sure I have the word correctly, we had some language difficulties between us).

"As well as I could tell the principal rock thereabouts was a creamy feldspar (although some of it looked almost like quartz) grandly streaked with deep violet -lavender (lepidolite). There was both white (colorless) and lavendar mica (muscovite), smoky quartz, and a broad seam of schist.

"Pressed for time, we left a thank-you note for Mr. Montgomery and started on our return. On the way down we picked up bright deep chartreuse-green granular rocks, a heavy piece streaked with blue and yellow, and a curious new rock (I can hardly wait to get those things here—I couldn't carry them on the plane and Olive and Bill are shipping them to me). The strange rock has about the luster and color of monel metal.

"I guess the altitude was high all right, an Indian had directed us to take the road to the top of the mountain, and I had a slight nosebleed."

The Harding was originally a lepidolite mine, then a microlite mine, and now a beryl mine. It is owned and operated by Arthur Montgomery of New York City. In the July, 1951, issue of MINING WORLD (121-2nd St., San Francisco 5, Calif.). Mr. Montgomery had a most interesting article titled "The Harding Pegmatite — Remarkable Storehouse of Massive White Beryl". This is one of the world's most unusual beryl mines and all who are interested in beryl should try to read this 4-page illustrated article. The Harding mine is in Taos County, north-central New Mexico, midway between Santa Fe and Taos (8 miles east of the village of Dixon).

NEW YORK—The following item, dated July 30, 1951, comes from Hans Claassen, 27 Allen St., New Hyde Park, N. Y.

"I would like to give you some information for your "World News". The locality is Oyster Bay, Nassau Co., N.Y., where marcasite is found in nodules scattered on the beach just north of Oyster Bay (the bay proper, not the town)".

Oyster Bay is in the northern part of Long Island on Long Island Sound.

Nice trilobite fossils have been found in dark gray limestone bordering Lake Erie, on the southern outskirts of the city of Buffalo, Erie Co., N.Y., by W. A. Scotchmer, 4645 Meadowbrook Rd., Niagara Falls, N. Y.

NORTH CAROLINA — Nice specimens of muscovite with garnet inclusions are found at Hawk, Mitchell Co., N.C. A 3x4 inch thin sheet of muscovite with dark red garnet (almandite) xls imbedded in it, was sent in by Russell P. MacFall, 630 Greenleaf Ave., Wilmette, Ill.

NORTH DAKOTA—Oil has been struck in North Dakota near Tioga, Williams Co. One well has been drilled 11,000 feet and may go even deeper.

OHIO—A card, dated July 21, 1951, sent by C. O. Gettings, 2001 Starr Ave., Toledo 5. Ohio, reads as follows:

"On route 12, several miles west of Castalia (Erie Co.), Ohio, is the old Wagner quarry. They quarried from the side of the hill till 1929 when it was abandoned. It is now nearly hid by trees. Here I found calcite that fluoresced light green, crinoid stems, small dark cubes of fluorite, and banded flint nodules in the limestone.

"In a dry creek bed south of Castalia, I found selenite xls up to ¾" and fossil-

iferrous flint. The flint is most interesting but not of cutting quality."

A letter dated Aug. 29, 1951, from Mr. Gettings, has the following paragraph:

"A blast at Clay Center opened several pockets of very weird colored fluorite. These pockets were of the same metallic colors found 20 years ago. Some looked exactly like galena. Some were bronze color and some steel blue. We also found many phantom crystals nested in celestite. We really were excited and worked from 8:00 in the morning to 6:00 that night. I went down to the quarry last night to see the outlook on the next blast but it looks as though the vein has run out."

In his letter dated Sept. 24, 1951, he writes:

"Last Sunday we went to Clay Center and the fluorite vein has disappeared, so the metallic find falls into history."

The limestone quarry at Clay Center, Ottawa Co., is Ohio's greatest mineral locality.

Incidently Mr. and Mrs. Gettings are the proud parents of a very sweet little girl, Celeste Colleen, who was born to them on Sept. 11, 1951.

OKLAHOMA—Another item in Mrs. Wiebe's "family letter" (see New Mexico) is her reference to alabaster in Oklahomo. On page 8 she writes:

"Sunday: Evelyn and young Dick and I took off for the Ducketts. These three people, a sister and two brothers, farm for a living and hunt rocks, Indian relics, and make rock objects for a hobby.—The most amazing thing to see was the collection of their carvings. They work in a rock which they call "alabaster". It's white with beautiful rose-red markings. Their tools for the big pieces are a rasp (wood file) and emery powder. The woman, who makes the small pieces, uses a sharpened sewing-machine needle stuck into a stick. In size, the rock carvings ranged from a cat a third of an inch high (part of a complete barnyard scene cut to a scale of 1/12, they said) to a vase about 30" tall. It's amazing that they can rough-cut this stuff with only the one tool and then give it such a high polish. The polish is about that of industrial pottery. Three rooms served as showrooms (they refuse to sell anything).

"Monday. Dick and Evelyn and I went to look for "alabaster" to which the Ducketts had kindly directed us. We had quite a time finding the right location because, chiefly, it was hard for me to believe that there would be only one rocky area in all the miles we drove. There we found the alabaster which the Ducketts use and also a good bit of petrified wood and some watery-rounded pebbles which looked like chalcedony."

The Ducketts live in Hooker, Okla., and the alabaster locality is near Hardesty, Texas Co., Okla. A letter dated Sept. 4, 1951, from Mrs. Wiebe tells us:

"The alabaster locality was near Hardesty which is south of Hooker, Oklahoma, and nearer to the Texas line; it is in Texas County, near a bridge over the Palo Duro River where it crosses one of the little "section" roads of the area. I cannot describe the locality more clearly—it all looks very much alike. However, the lady who delivers the mail to the ranchers in that area knew the place exactly and would probably tell anyone who is interested. We saw some of this same rock at Walsh, Colorado, just north of the town, near where the big bridge has been half-destroyed by a flood."

OREGON—For almost 100 years, huge deposits of low-grade nickel ore have been known to exist in Oregon. The deposits are near the town of Riddle (chiefly on Nickel Mt.), Douglas Co., where genthite and garnierite are the chief ores. Chrysoprase, chalcedony, chromite, hematite, ilmenite, magnetite, bronzite, quartz and olivine occur with the nickel ores. Because of their low nickel content, the deposits have not been worked.

PENNSYLVANIA — Two fine xled magnetite specimens from Cornwall, Lebanon Co., Penn., have been received from Mrs. Otto Bauhof, 352 Church Lane, Philadelphia 44, Penn. A note, dated Aug. 29, 1951, reads:

"Enclosed find some large magnetite crystals found on the old dump at the

Cornwall mine, Penn. These are the biggest crystals that have been found for a long time."

The iron mine at Cornwall is famous for its many minerals and its chief ore (magnetite) often comes in fine xls. In the specimens sent in by Mrs. Bauhof, the xls vary from ¼ to ½ inch across the face.

RHODE ISLAND — A nice loose greenish beryl xl, 2 inches long, was donated by Prof. Alonzo Quinn, Dept. of Geology, Brown University, Providence, R.I. The locality for the beryl is the Bonnet shore, Washington Co., R.I. The east coast of Washington County, along the Bonnet shore, contains pegmatite dikes in which occur nice beryl xls—it is from one of these dikes that the above xl comes from.

SOUTH CAROLINA—A deep green faceted emerald (beryl) from Earle's Station, Blacksburg, S.C., is on display at the American Museum of Natural History, New York City.

SOUTH DAKOTA—A nice specimen of yellowish-brown opalized wood has been donated to R&M by Mrs. E. P. Olson, Box 425, Beresford, S.D. The outside of the specimen is rough and light brown in color, inside is yellowish-brown. Tiny grayish chalcedony pebbles are imbedded in the rough surface. Mrs. Olson found the opalized wood in a gravel pit at Tabor, Bonne Homme Co., S.D.

TENNESSEE—William M. Johnson, RFD 6, Knoxville, Tenn., has sent R&M an interesting specimen which he collected at Copperhill, Polk Co., Tenn. The specimen consists of greenish prismatic xl masses of zoisite with pale green actinolite, bluish green quartz, and bronzy pyrrhotite.

TEXAS—The following is a 3rd reference to minerals in Mrs. Wiebe's "family letter" (see New Mexico).

"We went out to pick up Bill Martin and take off for Palo Duro Canyon to the south of the city (Amarillo, Texas). The Palo Duro Canyon is a big crack (800 feet deep and sometimes a mile wide) in the flat country of what Bill Martin calls the "high plains". The road down is another wicked one but this time black-topped. There are no bridges crossing the Palo Duro River so every time the two meet (8 times in all) the crossing is made on a solid concrete slab which is under water but safe except in times of "flash floods". The men helped me to find an incredible variety of new rocks ranging from red and purple sandstone to (what looked like) pure white marble to a piece that seemed to be agate and a small yellow chunk containing a dull yellowish green crystal. I wanted to stay on and on but of course I couldn't because I had to get back to Amarillo, have dinner, and take the night plane out at 9:30 for home."

Palo Duro Canyon, Armstrong Co., Texas, is especially noted for its very fine aragonite xls (see R&M, March-April, 1950, p. 151).

UTAH—The following note was received not long ago from Dr. A. L. Inglesby, Torrey, Utah:

"There is a deposit of rock salt of unknown dimensions where it is mined from the surface down by steam shovel. Occasionally clear xls are found but not common. Locality is about 4 miles west of U.S. highway 89 (6 miles south of Gunnison, Sanpete Co., Utah)."

A nice 2x3 inch colorless specimen of rock salt (halite) was sent in by Dr. Inglesby.

VERMONT—Recent visitors to the office of R&M were Mr. and Mrs. Stanley Goding, Box 815, Springfield, Vt. They are active mineral collectors and being very friendly and congenial their visit was a most enjoyable one. Before they left, Mr. Goding donated a number of most interesting specimens, one of which was a 4x10, grayish, fibrous mass of asbestus (anthophyllite variety) associated with gray cleavable dolomite, and greenish talc. The locality is Hammondsville, Windsor Co., Vt.

VIRGINIA — In the Sept. 1951, MINERAL MINUTES of the Mineralogical Society of the District of Columbia (French Morgan, Editor, 2601 Brentwood Rd., N.E., Washington 18, D.C.) appears the following:

"The ink was hardly dry on our article on the Arlington quarry at Goose Creek (Loudoun Co., Va.), appearing in the last number of ROCKS AND MINERAL: (July-August, 1951, pp. 339-343), when Ned Blandford added two new minerals to the list found there—greenockite and adularia, the last being a variety of orthoclase. As only three specimens were found and the xls are very small, most of us will never find it. This is the first find of a greenockite reported from Virginia."

WASHINGTON—This state leads the country in the production of magnesite, which is quarried at Chewelah, Stevens Co. The magnesite looks like coarse-grained white, black, pink or red marble. The deposits are very large, several are known to contain 1,000,000 tons each.

WEST VIRGINIA—Small white calcite xls occur in limestone, 2 miles east of Petersburg, Grant Co., W. Va.

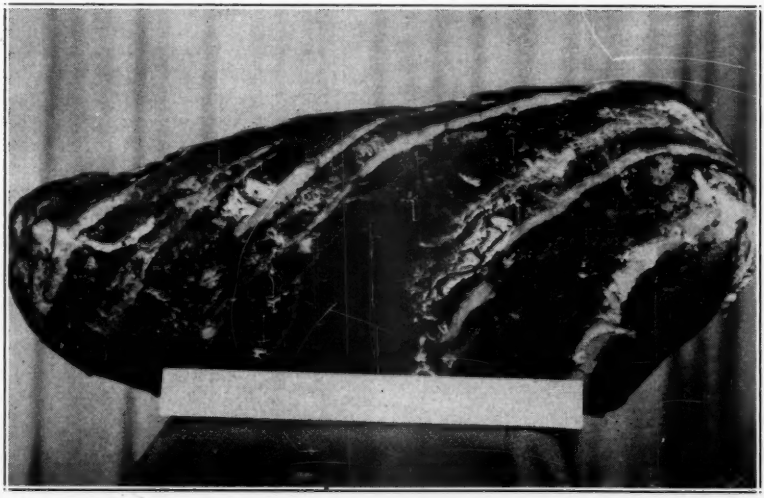
WISCONSIN—Last June, Amel Priest of Peru, Iowa, was up at Amery, Polk Co., Wisc., on a fishing trip. He picked up some pebbles while there; one was basalt with xline green epidote.

WYOMING—Flat tabular dolomite xls after aragonite xls occur in the Big Horn Basin near Kane, Big Horn Co., Wyo. The xls range from nearly white through light gray to light brown where stained by iron and in size from one to two inches across. The xls are found imbedded in a bed of gypsum. Local residents call these flat xls "Indian Pennies".

ALASKA—The following item, dated Oct. 1, 1951, was received from V. G. Baker, Box 1891, Fairbanks, Alaska:

"An interesting and unusual nephrite jade boulder was found during the summer of 1951 on the Shungnak River, a tributary of the Kobuk River in arctic Alaska.

"The boulder is mostly black jade but more or less regularly spaced are six approximately one-quarter inch streaks of apple-green jade of apparent high quality. Apple-green jade is rare in the Kobuk. The boulder weighed 50 pounds".



The 50 lb. jade boulder found during the summer of 1951 on the Shungnak River in Alaska.

ALASKA—We are indebted to Frank H. Waskey, Dillingham, Alaska, for a number of small, brown limonite concretions. The concretions are slender, thin, rounded, and 1½ inches in length. With a hole through each, as if they had been bored, the limonites look like small sinkers used in fishing, except for their color. A note from Mr. Waskey tells us:

"They are limonite concretions from the beach at Nushagak (Bristol Bay), Alaska. These are found replacing willow rootlets that have grown along banks of small streams whose waters carry iron."

ARGENTINA—Ellis C. Soper, Franklin, N.C., is building some cement plants in the Patagonia region of Argentina. The plants are located on the Atlantic coast at Bahia Solano (Gulf of San Jorge), Chubut Province. A letter, dated May 7, 1951, from Mr. Soper has the following paragraphs:

"I sent you today a sample of beach sand and also some beach gravel which I thought might be of interest. We are using the sand and the gravel for concrete purposes."

The beach sand is a coarse, gray sand consisting of chalcedony (gray), granite, limestone, porphyry and lots of sea shells (mostly white, resembling opal, but bright purple also present); many of these shells fluoresce white, greenish, bluish, and orange under the Mineralight.

The gravel consists of rounded, smooth pebbles, 1x1—2x2 of black porphyries and gray chalcedony. Some of the chalcedony is of fair gem quality. What an area for chalcedony—it is so common in the sands and gravels that it is being used as concrete material!

AUSTRALIA—The following letter, dated Aug. 20, 1949, sent to Russell P. MacFall, 630 Greenleaf Ave., Wilmette, Ill., is from a gem miner, Herman Hohne, Rubyvale, via Anakie, Queensland, Australia. Although it is over 2 years old, Mr. MacFall thought it of sufficient interest to our readers and so sent it in.

"I promised to let you know something about this field (sapphire). This field was discovered about 1883 and then the sapphires were plentiful and were sold for as low as 7/5 ($1.87) per punce. I have been on this field for 40 years and only lately were *two* of the biggest *yellow* stones recovered; one on the Willows, and only a few days ago one by a man named Cliff Donovan. This stone is one of the finest I have ever seen, a very rosin yellow worth here about £1500 (about $7500).

"In years gone by, there was a floating population of 1600 and now, in both towns, Rubyvale and Sapphire Town, there are about 60 people left, mostly old men and women, and a few young ones which have been born here.

"This place here is known for longevity of its people and only this year 5 died whose ages were 93, 92, 90, 88, 87. There are still 5 living whose ages are 93, 90, 90, 89, and 85.

"Well, now, this field is worked out and we are lucky if we find an ounce of stone a month. We are reworking the old workings now and sinking on patches what are left up to 60 feet and mostly they were duffers (valueless).

"The buyer was up from Brisbane and all he could get for the 6 months period was 80 ounces (he comes every 6 months) at a price of £30 (about $150) per ounce.

"The main industry here is cattle as there is a miners reserve of 6000 steers.

"Now you might have heard that the coal miners were out on strike. That is alright for them as most coal mines are near cities and we people inland have to suffer as we are 200 miles inland and 20 miles from the railway and our mail comes once every 14 days and we go to Anakie to collect it.

"Here is a good timber country and if you go further west, also southwest, there are the open black soil plains with not a tree on them for 800 to 900 miles and in dry weather many a man perished of thirst.

"There are very few of the original natives left and in by gone days they had a rotten spin with the coming of white man. You know the history of the U.S. Indians; only the history of the Aus-

tralians is worse. You can still find remains of the blacks—largely about in the hill country."

CANADA—A small red quartzite pebble from the city of Quebec, Quebec Province, Canada, was sent in recently by Mrs. Ruth Wentworth, 135 Maine Ave., Portland 5, Me. Her note read:

"Quartzite from side of hill in Quebec City, Canada, where General Wolfe scaled the heights in 1759, in the battle between the French and the English for the capture of Quebec. The side of the hill is covered with boulders and pebbles."

A letter dated Aug. 3, 1951, from C. O. Gettings, 2001 Starr Ave., Toledo 5, Ohio, has this item:

"Just got some excellent dolomite xls, pink saddlebacks, and sphalerite xls, from the Walker Bros. quarry near Niagara Falls, Ont., Canada. My older son was near there on a vacation and he collected some for me.

"From Sudbury, Ont., he brought back garnets up to two inches. He also brought me a most interesting paper, THE NORTHERN MINER; in it are many locations and much information."

COLOMBIA—Loose rock xls, 3 inches in length, and coming from Mina del Alumbral, Muzo, Dept. of Boyaca, Colombia, were seen in the Chicago Museum of Natural History, Chicago, Ill., Wed., May 2, 1951.

DENMARK—Molybdenite occurs in pegmatite in the quarries at Klippegaard, near Ronne, on the Island of Bornholm, Denmark.

DOMINICAN REPUBLIC — Selenite xls occur with halite in the well known Salt Hills in southwestern Dominican Republic near the city of Cabral (Duverge Community), Barahona province.

EGYPT—Red, oolitic hematite is found in the Aswan district, Egypt.

ENGLAND — An interesting fossil, dark gray clamshells embedded in dark gray limestone which outcrops at Saltburn-by-Sea, Yorkshire, England, was recently received from Rev. Wm. J. Frazer, 625 Main St., Moosic 7, Penn. The specimen was collected by Miss Eva Bayne, 19 The Chine, Saltburn-by-Sea, York, England.

FRANCE — Grayish-green common opal occurs at Gergovie, near Clermont-Ferrand, Puy-de-Dome, France.

GERMANY—Dark grayish xls of talc pseudo after quartz and embedded in dark grayish steatite, occur at Thiersheim, Fichtelgebirge, Bavaria, Germany.

GREECE—Red massive bauxite occurs on Amorgos Island, Greece.

HAWAII—Small dark green olivine pebbles come from Aliapiaakai (Salt Lake) crater, Moanalua, Oahu, Hawaii.

INDIA—Nice gem quality gray banded agate, from Calcutta, Bengal, India, has been donated to R&M by Arch Nisbet, 3218 McLean Ave., Chicago 47, Ill.

IRELAND—Nice specimens of fibrous and stalactitic malachite have been found at the Lackamore mine, near Newport, Tipperary, Ireland.

ITALY—In the Mussa Alp, at Ala, Piedmont, Italy, beautiful honey-yellow and green xls of andradite (garnet) are found in cavities of a massive green pyroxene.

JAPAN—Colorless xls of danburite occur in the Toroku mine, Miyazaki Prefecture, Kyushu Island, Japan.

KENYA—Beautiful specimens of kyanite (cyanite), in blue, platy masses, in part translucent, are found at Sultan Hamud, 75 miles S.E. of Nairobi, Kenya, East Africa.

KOREA—Large sheets of mountain leather (amphibole) have been found in limestone along the Yalu River, Korea.

MEXICO—Roy Shoemaker, 1827 W. Drescher St., San Diego 11, Calif., has been making a number of collecting trips into Lower California, Mexico. At Ro-

sareto, Lower California, he found some nice specimens of natrolte (white, also brown due to iron staining); chabazite (colorless); and analcite (colorless). The specimens come from the mountains 3 miles east of Rosareto (a small town on the Pacific Ocean). Rosareto is about 15 miles south of Tijuana (Mexican town on the California border).

"In the same locality there are some golden dogtooth calcites. I have seen some wonderful specimens come out of there," he informs us in his letter dated Sept. 17, 1951.

NEW ZEALAND — A letter dated Sept. 10, 1951, has been received from Jim Sinclair, Deadman's, Lake Te Anau, Southland, New Zealand. Part of the lattre reads:

"As promised, I am today forwarding on to you, under separate cover, a sample of mineral found on the Barrier Range which runs along the east side of the Hollyford River(Southland County, South Island, New Zealand).

"This sample is the first of its kind ever found in this part and all the geologists that have examined it are unable to explain what it is and how it occurs. It was found 7,000 feet above sea level in an area where there are rich deposits of asbestos. There is only one seam of this mineral and it is not large. Quite a number of persons have asked me for a sample but yours is the first sample I have given away.

"I picked up a beautiful piece of bowenite on my last trip over the "Kaipo" (this place is as far away from civilization as you can get in New Zealand). It is situated north of Milford, on the west coast of New Zealand. This piece of bowenite went to South Africa where a buyer gave me a good price for it.

"Enclosed are a few snaps of the country around here and the two of myself were taken: the day I left on a trip into the rough and the day I returned. Yes! Before and after. I generally go on these trips to the rough places by myself but lately I have had the company of a young man who has climbed one of your hard mountains, Mt. McKinley. This friend comes from Alaska.

"Deadman's is the name given to our main camp, 66 miles northwest of Te Anau.

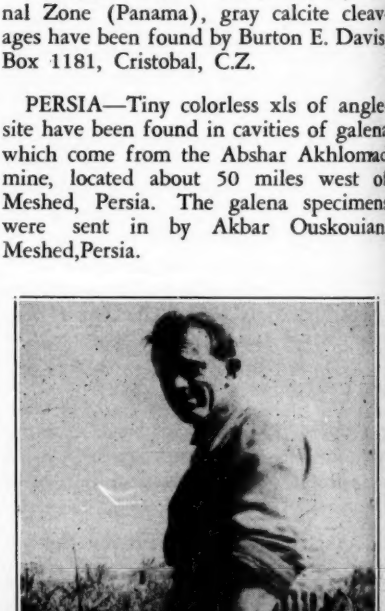
"I know that the sample sent you has no commercial value but from a collector's point of view I would say it is unique. Awaiting a reply to see what you in that huge country of yours think of that small piece of New Zealand that has been sent on to you."

The mineral is a nice dark green clinochlore beautifully xled on dark green serpentine.

NORWAY—White xline masses of topaz are found at Iveland, Saetersdalen, Aust-Agder Province, Norway.

PANAMA—Near Guinea Point, Canal Zone (Panama), gray calcite cleavages have been found by Burton E. Davis, Box 1181, Cristobal, C.Z.

PERSIA—Tiny colorless xls of anglesite have been found in cavities of galena which come from the Abshar Akhlomad mine, located about 50 miles west of Meshed, Persia. The galena specimens were sent in by Akbar Ouskouian, Meshed,Persia.



Jim Sinclair starting off on a prospecting trip into the wilds of New Zealand.

SCOTLAND — Fine rock xls have been found in cavities of trap rock at Ballygroggan, Mull of Cantyre, Argyleshire, Scotland.

SWEDEN — Holmquisite, as bluish-black acicular xls in dark greenish schist, was first discovered on the island of Utö, in Sodermanland, Sweden. It is found in a metamorphic schist near the contact of a lithium pegmatite.

SWITZERLAND — Beautiful, white xled albite, occurs on St. Gothard, Switzerland.

TASMANIA—Pretty groups of dark brown xls of axinite are found in the zinc-lead mines at Roseberry, Montague County, Tasmania.

TURKEY—Fine specimens of yellow orpiment with red realgar are found at Zirneihbad, near Kirmanshah, Kurdistan, Turkey.

UGANDA—A nice dark brown, loose, cassiterite xl from Ankole, Uganda, East Africa, has been donated to R&M by John S. Albanese, P.O. Box 536, Newark 1, N. J.

CYANITE OCCURRENCE IN MASSACHUSETTS

By PETER ZODAC

A few years ago while traveling from Huntington to Chester, in Massachusetts, I ran across an interesting occurrence of cyanite in a cut along the road (U. S. 20) about ½ mile west of Huntington. At the locality there is a 200 foot wide mica schist outcrop (10 feet high) bordering the left edge of road; a railroad 100 feet to right and 50 feet below runs along a 200 feet wide river (West Branch of Westfield River).

The cyanite (kyanite) was found in deep blue platy crystals in a vertical smoky quartz vein, about 3 feet wide, in about the center of the schist outcrop. Tiny red garnet (almandite) crystals were noted in the mica achist but they were not of good quality.

The following mileage may be helpful.

0.00 miles—Huntington.

0.60 miles—Cyanite locality (left) on U. S. 20.

2.00 miles—Huntington-Chester town line.

5.00 miles—Small tunnel (left edge of road) seen but not explored; river 25 feet to right here.

6.20 miles—Chester.

Huntington is in southwestern Massachusetts.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933 OF ROCKS and MINERALS published **BI-MONTHLY** at **PEEKSKILL, N. Y.,** for **OCTOBER 1st, 1951** — State of New York, County of Westchester.

Before me, a Notary Public in and for the state and county aforesaid, personally appeared **PETER ZODAC,** who having been duly sworn according to law, deposes and says that he is the **EDITOR** and **PUBLISHER** of **ROCKS and MINERALS** and the following is, to the best of his knowledge and belief, a true statement of the ownership, management of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the name and address of the publisher, editor, managing editor, and business manager is **PETER ZODAC, PEEKSKILL, N. Y.**

2. That the owner is: **PETER ZODAC, PEEKSKILL, N. Y.**

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: **NONE.**

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given: also that the said two paragraphs contain statements embracing affidavit's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affidavit has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

PETER ZODAC

Sworn to and subscribed before me this 24th day of September, 1951.

My commission expires March 31, 1952

ANNA M. SCHLICK

A HALL OF THREE BILLION YESTERYEARS

A spectacular new hall — a "hall of three billion yesteryears" — was opened to the public at Chicago Natural History Museum, Chicago, Ill., on Tuesday (October 2nd, 1951).

A formal opening and preview restricted to approximately 5,000 Chicagoans and suburbanites who are members of the museum, and their guests, was held Monday evening (October 1) at eight o'clock. o'clock.

The new hall — named Frederick J. V. Skiff Hall in honor of the first director of the museum (1893-1921)—answers such questions as the famout one posed by Francois Villon—"Where are the snows of yesteryear?"—and such other questions as: "What part of the world was covered with ice a few thousand years ago?" "What living things ruled the world a few million years ago?"

To such questions, the museum is now prepared to give answers. In the new hall, the long panorama of over a billion years of earth history is set forth in a series of entirely new exhibits, emphasizing the last 540 millon years, the time during which the earth has been inhabited by living creatures.

Chicago Area Fossils Featured

The snows that fell in Wisconsin a few hundred years ago, we find, are now being pumped from deep wells beneath Chicago, as water for industrial use. A diagram shows that the water has slowly worked its way through beds of underground porous rock. The area of the great ice sheet of about 25,000 years ago is shown as a cold icy-looking layer of plastic, covering part of a world map. Ancient animals and plants from the ages before history are there in abundance. Many are in the form of accurate life-sized models shown in natural surroundings, but more are shown as actual fossils, from Chicago's quarries, Illinois' coal fields, and hundreds of more distant places in the United States and elsewhere.

The exhibits occupy 53 new cases and constitute a summary of life in the world through the twelve geologic periods, a historical sequence. Fossils are arranged by natural groups, forming a biological sequence.

10 Elaborate Dioramas

Outstanding feature is a series of ten habitat groups restoring the weird creatures of eons ago, made by the noted sculptor, George Marchand, of Ebenezer, N. Y.

The restorations of animals in habitat groups showing them as they appeared in life amid reproductions of their natural environments are as follows:

(1) Cambrian sea animals of about 500,000,000 years ago. Reproductions of early forms of sea cucumbers, crustaceans and sponges based on fossils from the Rocky Mountains of British Columbia.

(2) Ordovician sea animals of about 390,000,000 yeaers ago. Corals, clams, snails, brachiopods, bryozoans and trilobites from the bottom of a shallow sea that once extended across the central United States. Based on fossils from the area of Cincinnati.

(3) A Silurian coral reef of the Chicago region about 365,000,000 years ago. This was part of a chain of reefs extending from Kentucky to Hudson Bay. The group shows corals, cystoids (plant-like animals), brachiopods, clams, snails, cephalopods, and trilobites.

(4) Silurian sea-scorpions of about 350,000,000 years ago based on fossils from around Buffalo, N. Y. Some of these creatures, related to modern scorpions, grew to be 11 feet long, and are called eurypterids.

(5) Devonian coral reef of about 330,000,000 years ago. Included here are brachiopods, snails, cephalopods, trilobites, blastoids, crinoids, solitary corals, colonial corals. Blastoids and crinoids are animals growing on stems like plants. Based on fossils from Indiana, Kentucky and New York State.

(6) Mississippian sea-lillies of about 300,000,000 years ago. Based on fossils of the Mississippi Valley, especially Indiana and Iowa. Crinoids, or sea-lillies, are animals related to star fish.

(7) A Permian reef of about 220,000,000 years ago, based on fossils from western Texas. Many of these species have been discovered so recently that they have not as yet been given scientific names. The reef was composed principally of brachiopods, a kind of shellfish resembling clams but lower in the scale of life.

(8) Jurassic sea animals of about 150,000,000 years ago based on specimens from Montana and Wyoming. Swimming animals are belemnites, extinct relatives of squids; they swim frontwards by waving their tentacles or backwards by jet propulsion, squirting water from a sac beneath the mouth. On sea bottom is a bed of fat oysters, unfortunately extinct.

(9) Cretaceous mollusks of about 100,000,00 years ago. Here are shown some extinct varieties of oysters, clams, snails, and ammonites, busily feeding on each other and on microscopic plants and animals among the towering seaweeds.

(10) Tertiary lake fishes of about 53,000,000 years ago, based on specimens from lake-bed clay deposits at town of Fossil, Wyoming.

Outstanding qualities of the new hall are spaciousness both in the arrangement of cases and of exhibits in them, tasteful use of color, and clarity in presentation of subject matter.

Entering the hall from the east, the visitor sees first a group of introductory exhibits. People who collect their own fossils will find a map showing the distribution of bedrock of various ages in the Chicago area, with examples of fossils found within 50 miles of the Loop. Another case shows what fossils are, and a collection of objects that look like fossils but are really something else.

Another introductory case shows the influence of mutation and selection on evolution. This intricate subject is helped along by specimens chosen to show fossil types that have died out, others that have persisted for long ages, and others that followed evolutionary blind alleys. Models on a diagrammatic background show the relationship of all groups of animals and plants.

The natural groups of animals and plants are arranged in systematic sequence beginning with the protozoans and sponges, and a case showing how foraminifera, tiny fossil protozoans, are important in oil-well drilling. In other cases are the groups of plants that have left a significant fossil record, beginning with a case showing the relation of fossil plants to coal, and ending with a "family tree" illustrating the relationship and classification of plants.

The hall was prepared under the supervision of Eugene S. Richardson, Jr., curator of fossil invertebrates, and Dr. Sharat K. Roy, chief curator of geology. There are 46 original oil paintings, painted maps and 43 drawings by John Conrad Hansen. Diagrams, several the full size of a case and serving as background for fossils, are principally the work of Harry Changnon, curator of geology exhibits. Models of animals were made by Joseph B. Krstolich, department of zoology sculptor, and plant models by Emil Sella, curator of exhibits in the department of botany. Keys to the models in the groups are furnished by small paintings made by Miss Laura Sparks. Preparators Henry Horback and Henry U. Taylor also contributed their talents to preparation of the hall.

WITT HILL CHRYSOBERYL LOCALITY

The chrysoberyl crystals to be found at Witt Hill in Greenwood, Maine, are not large, about ½ inch average size, but the locality is one of the few places in Maine where one is fairly certain to get specimens.

Other minerals there are garnet, fibrolite, spinel, and zircon; these last two are really micros and require a glass to see them. Also autunite specks in the solid rock.

I was there last summer and had trouble in locating the place, it was so overgrown and the small hole filled in, but it should not be forgotten nor crossed off as a producer.

C. F. Marble
Buckfield, Maine

A THREE WAY PORTABLE MINERAL LAMP

By R. STEENECK

70 Perry Street, New York 14, N. Y.

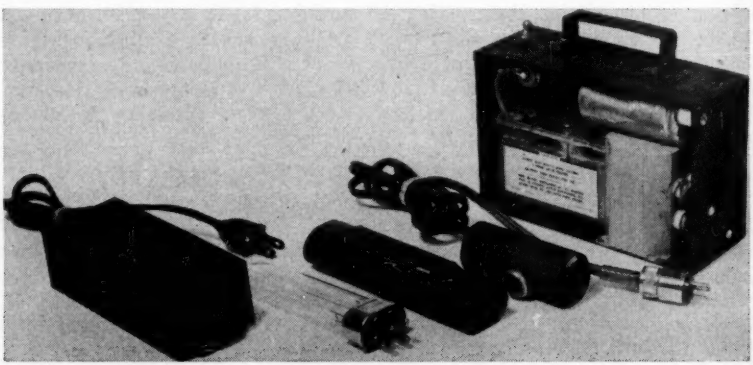
Several articles have already appeared in ROCKS AND MINERALS on the construction of homemade mineral lights working from house current. Very little, however, has yet been written about portable lamps that can be taken on field trips. It is not a difficult matter to build such a device of either the long or short wave variety. With the limited power available, however, so much more fluorescent activity can be realized with the short wave lamp that it would be well to build this type first and experiment with long waves later if desired.

The lamp to use is the 4-watt Germicidal lamp G4/T4/1 listing at $3.40 in the Graybar catalog. This lamp is a U-shaped fluorescent type lamp with a clear glass tube made of Type 9741 glass which is transparent to 2536 angstrom ultra violet. About 20% of the input energy is radiated in the ultra violet, so this lamp, in spite of its soft blue visible glow, is very harmful to the eyes. It is advisable to protect your eyes from these harmful rays with either glasses or goggles. Smoked or tinted glasses are not necessary since ordinary glass will block all the harmful rays that are radiated.

This lamp has been christened the three way portable because it is similar to the three way portable radio in that it can be operated on either AC-DC or battery power. The wiring diagram shows the operating circuits for these three types of electric power.

The lamp itself is shown on the right hand side of the sketch and is terminated on a four prong base which fits any standard four prong radio tube socket. The base is oval shaped and is of such dimensions that a 1 - 3/16 in. inside diameter thin walled aluminum tube may be flattened to form a snugly fitted shield. An opening 3 inches long and slightly less than 1 inch wide may be cut in the shield to hold the lamp filter. The open end of the shield can be closed with an oval plug of wood. The lamp socket and starting push button may be mounted in a bakelite tube or wooden handle with a convenient length of wire attached. It is suggested that the wire be terminated in a small plug that will not fit into regular lamp receptacles.

For AC operation the balance of the circuit simply consists of a 4 watt fluorescent lamp ballast costing approximately $1.00 and wired as shown in the drawing. To light the lamp after all connections have been made simply press the start button for about 5 seconds and re-



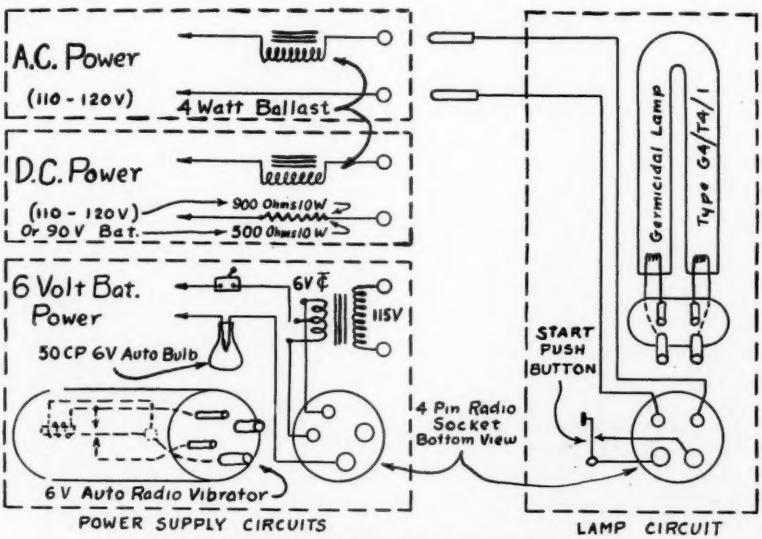
The three-way portable mineral lamp.

lease. Pressing the button heats the lamp filaments and releasing the button sends an inductive surge through the lamp starting the arc. Occasionally, the button may be released at a time in the AC cycle when no inductive kick will result and the lamp will not start. If so, repeat the process, your luck can't be bad all your life.

For DC operation the same 4 watt ballast may be used, however, resistance must be added as shown for proper operation. It is possible to operate this lamp from a 90 volt radio battery. This is a simple way in which the device can be made portable. Since the current drain, however, is about 6 times greater than that drawn by the average portable radio, this simple method may prove to be quite expensive if extensive field use is planned.

For extensive portable use, 6 volt battery operation will be the most practical. The unit may be operated from a car battery, a small six volt war surplus storage battery, or a hot shot ignition battery if desired. A vibrator and step up transformer are wired as shown on the diagram. A four pin 6 volt auto radio vibrator is shown as this is the most common type used. Any other type of 6 volt vibrator, however, will do the job and the inexpensive bargain type vibrators advertised in radio stores are quite satisfactory. Even discarded vibrators may have their points cleaned with a file and made to deliver the goods. The step up transformr is a 6 volt filament transformer with a center tap on the 6 volt winding, such as the UTC FT2, FT4 stancor P3064, etc. In fact, an 8 volt CT transformer now advertised by the Radio Ham Shack in New York for only 87 cents gives excellent results. A small amount of resistance should be inserted in the 6 volt leads as shown on the diagram to operate the lamp at its proper level. A 50 CP 6 volt spotlight bulb makes an ideal resistance unit for this purpose. It will tend to regulate the current drain to suit battery conditions and will protect the battery from excessive drain should the vibrator freeze over on one contact.

And now we come to the filter! Ah yes the filter!! It seems that everything nature made purple is opaque to short wave ultra violet. The "Corning Glass" people, however, do make a filter glass which does pass a good percentage of



Wiring Diagram Showing the Operating Circuits

short wave ultra violet but is quite expensive. It is known as Corex 9863 and may be purchased from the E&S Optical Co., 911 Willow Ave., Hoboken, N. J. A piece 3" x 1" ground and polished to approximately 5/64 in. thickness sells for $5.65.

Some results may be obtained with no filter at all if the minerals are strongly fluorescent. For best results, however, a filter is recommended.

For those who wish to experiment with long wave ultra violet there is a 4 watt fluorescent lamp Type 360 BL2 available. This lamp is now selling as a war surplus item at the American Surplus Trading Company, 332 Canal Street, New York, for 35 cents each or 3 for $1.00. The lamp itself looks like a miniature fluorescent bulb about six inches in length and when lit, gives out a bright greenish blue light.

This light when filtered with a long wave filter will produce long wave ultra violet in interesting quantities, but will not begin to compare in activity with the output of the short wave lamp.

COLLECTOR'S COLUMN

Conducted by A. CAL LECTOR

This column, designed to be a help to beginners in Mineralogy, began with the Sept.-Oct., 1948 issue. In the last issue we observed dolomite, this time let us look at epidote.

Epidote

The name epidote was given by Haüy, a French mineralogist, who was the founder of the science of crystallography and thus systematic mineralogy. The name was derived from the Greek term for increase, since it was observed that the base of the prism had one side longer than the other.

Epidote is a silicate of calcium, aluminum, and iron with water. It is transparent to opaque, and ranges in color from the peculiar yellowish-green (pistachio) in ordinary epidote, through other shades of green, to blackish-green in some crystals. Although it is quite rare, some colorless epidote has been found. Epidote is a widespread mineral, occurring commonly in metamorphic rocks such as gneiss, various schists and contact limestone. It occurs as fibrous and granular masses and as excellent prismatic crystals which usually have only one termination. The hardness of epidote is 6 to 7 on Moh's scale.

The finest crystals of epidote, many of them gem quality, came from Pinzgau, Austria. Fine specimens have been found in Piedmont, Italy; Dauphiné, France; Arendal, Norway, and Switzerland. Groups of superb crystals of a deep greenish black color come from near Sulzer, Prince of Wales Island, Alaska.

In the United States, fine crystals have been found at Haddam, Connecticut and Riverside, California. Fine micro crystals have been collected recently at th Belmont quarry, Goose Creek, Loudoun County, Virginia. Massive epidote associated with quartz and andradite garnet is found on Garnet Hill, Calaveras County, California. Rockhounds of North Carolina and southern Virginia have been making attractive cabochons from a local rock called unakite, which is a mixture of green epidote, flesh colored orthoclase, and quartz.

Epidote should be represented in every collection, so, if you do not have some, get a specimen soon.

THE AMATEUR LAPIDARY

Conducted by COMMANDER JOHN SINKANKAS
1107 S. Oakcrest Road, Arlington, Va.

Amateur and professional lapidaries are cordially invited to submit contributions and so make this department of interest to all.

The Problem of Heat

A very fine and informative letter received recently from Mr. Hugh Leiper of the Austin (Texas) Gem and Mineral Society contains some valuable hints for the lapidary which I will pass along in this article. However, before then I want to discuss the problems of heat which create so many difficulties in the processing of gem stones. Mr. Leiper's letter served to get my thoughts together on this problem and my thanks to him for starting off an article on a long-overdue subject.

It would be just lovely if we could get away from heat altogether in our work since every major step we take either demands heat or creates an excess which we must disperse somehow without damage to the stone. Heat seems inescapable and the best we can do is learn how to get along with it.

I believe that heat problems in sanding have been pretty well covered and since articles on grinding, sawing, and polishing are coming up, I will confine this discussion to the problems of heat in connection with dopping, particularly for those more delicate materials which call for extreme care.

Most of us are prone to assume that cracking of stones is due to overheating, a moment's reflection will show that there is more to this cracking than a mere rise in temperature, in fact most cracking is due to uneven heating rather than to the rise in temperature. There is a big difference between the two since it brings in the physical constant called 'coefficient of expansion'. Many substances can stand very high temperature before fusing or melting but paradoxically crack badly even with modest rises in temperature. This is most often explained by uneven expansion of the material due to uneven heat distribution within the material. The amount a substance will expand as its temperature is raised can be calculated by applying the coefficient of expansion. For practical purposes we can say that this coefficient is an indicator of the thermo-sensitivity of the material. Uneven heating within the material brings up the point of 'thermal conductivity' or the ability of a substance to pass heat along within itself, a very important property tied-in directly with the coefficient of expansion and temperature.

Some substances pass heat quickly and are called good or excellent 'thermal conductors', others pass heat so slowly or poorly that we call them insulators. In the first group are found the metals, particularly silver, copper, and aluminum. The other extreme group is represented by such things as gases and vacuums. Glass wool, kimsull, and other home insulating materials owe their insulating properties to the air which they have trapped between their fibres. In general, solid substances conduct heat rather well but a division of them conduct heat much better, that is crystalline substances. Among gem minerals we find that we have both classes of solid conductors, the crystalline and the non-crystalline or amorphous. The first is represented by such common lapidary raw materials as quartz, topaz, tourmaline, sodalite, etc. The common amorphous gem materials are: obsidian, opal, amber, etc.

Several examples can be given of extremes of heat conduction. A piece of amber can be held in the fingers and the end ignited; the conductivity is so poor that it will burn for a long time before the fingers sense a rise in temperature. A piece of quartz heated gently over a flame transmits heat so quickly that we find it impossible to hold it for more than a few seconds. To show how the same piece of quartz can be converted into

a poor conductor by altering its structure from one of a crystalline nature to an amorphous state, we need only to take the example of a common pyrex glass dish which is made almost entirely of fused quartz. An article of pyrex can be held in the fingers for a long time before it becomes too hot to hold if the other end is immersed in a flame. Thus we can see that thermal conductivity is greatly reduced in those materials which are non-crystalline in structure. So far we have found that cracking is most commonly due to uneven heating which results from poor conductivity within the material, yet why doesn't the pyrex dish which is amorphous and a poor conductor crack into smithereens? A good question and one which brings in the final property which must be considered in this discussion on heat, that is toughness, or the ability of the material to resist breaking.

Our best conductors, the metals, are so tough that we can give them the severest sort of handling without ordinarily fearing for the development of cracks. On the other hand, the poorest class of solid conductors, the amorphous materials, are sometimes so sensitive that fantastic precautions have to be taken to prevent cracking. Ordinary window glass for example is so brittle that even a small difference in temperature from one end to another will cause enough expansion coupled with the brittleness to shatter the pane. Pyrex is a special breed of glass in which the coefficient of expansion has been greatly reduced and toughness so increased that it can take considerably more abuse than the ordinary glasses. Toughness can also be a function of the structure since coarsely crystalline quartz like citrine and amethyst is fairly sensitive in spite of being a good thermal conductor while agate, the same material, being very finely crystalline, is much tougher a fact explainable only by its structure. This fine structure no doubt contributes also to the extreme toughness of most metals. Among minerals, the extreme in toughness is probably best displayed by Burma Jade which is broken up it is said, by Burmese miners heating the boulders in fires and then dousing with water, breaking only occurring when the sudden shock of the cooling water is felt by the stones.

Another consideration in the heating of any gem mineral is the possibility of foreign material being included in the stone which upon heating, may expand greatly and burst the stone. This possibility is excellent in the case of agate if we attempt to raise its temperature high enough to affect a color change as in darkening carnelians. The foreign matter is water which would quickly change to steam upon abrupt heating and literally cause the stone to explode. Some facetting materials may occasionally have liquid inclusions which may cause small cracks to appear but it is generally nothing to worry about.

Far more important than foreign matter inclusions is the fact that many and we may not be far wrong in saying *most* materials come out of the earth with considerable strains already imposed on them which are the residuum of stresses created during their formation. Examples of these strains are common: Cleavage planes often show up which are iridescent toward the interior showing that the crack has drawn apart more at the surface of the specimen, fractures often show the same effect. These are danger signs to the lapidary warning him of unrelieved stresses still locked in the material and which will most likely be aggravated when subjected to the expansion of heat. The prudent lapidary strives to preform his material in such a way that all of these cracks are ground away. Tourmalines with many fine cracks or crazing on the surface of prism faces, particularly show the stresses within. If you have a choice in buying rough, avoid this type of material altogether. This material can be successfully cut of course, but the warning signs are there for you to go very easy on the heat.

With the foregoing elementary review of heat problems, we can now go on to practical applications in the workshop. The vast majority of stones can be heated by simply placing them on a metal plate at a suitable height above the source of heat whether it be flame or heating ele-

ment. For flame types it may sometimes be best to use a metal plate of excellent thermal conductivity such as copper or aluminum since the tendency of the flame is to create a very hot spot directly over its own tip. There are some unique advantages however, to using a steel plate with a flame because different degrees of heat can be obtained depending on how far out from the center the stone is placed. A large tough stone like an agate can be placed in the hot spot because it will need a lot of heat and can stand it, while a fragile gem like an opal can be placed on the outside portion of the plate for gentle heating. If it doesn't get enough, it can be moved in to a place where just the right amount of heat is available. Thus the steel plate used with an alchohol flame can provide numerous degrees of temperature on one plate which can be further varied by adjusting the height of flame.

The copper or aluminum plate also has some advantages which bear discussion. Because of their excellent conductivity, these plates can spread heat from a single source very evenly over the surface so that there won't be too much difference from the outside to the inside. If you are dopping a large number of stones of about the same thermal sensitivity, this plate can have the heat source adjusted to the correct supply and all the stones will be heated the same amount. For mass production of say a batch of agates, this may well be a good bet. For myself, I prefer a steel plate with an alchohol flame which can be readily adjusted to put any degree of heat where you want it in a matter of seconds. I would be cautious about the use of electrical heating elements built into a dopping stand since the heat source is constant and if too hot, troublesome to change.

The handiest gadget I've used for dopping is a cut-out large size orange juice can. A panel about 3½ inches wide is cut out of one side to within 2 inches of the top. The sharp edges are sanded down and that's all there is to do! A small alcohol lamp is placed inside and the flame adjusted to the desired height. The top being steel, gives the differential heat which is desirable in dopping a mixed bag of gem materials, opals on the outside agates toward the center. A little practice with this no-expense rig and you will dop as well as any fancier rig will permit. If a circular pad of asbestos sheet is placed on the top a somewhat slower and more even heat can be obtained. If very delicate materials are being handled, cut out a small ring from a smaller size can to surround the stones, this will effectively cut down convection of cold air over the stone and largely eliminate the danger of cracking. The alcohol flame can be started off as a tiny nubbin and gradually increased in size if it is found to be too low. Do not buy the type of alcohol lamp which does not have a wick raising and lowering wheel.

The above dopping schemes are fairly conventional but now we have Mr. Leiper's suggested scheme involving infra-red heat, but I'll let the author of that suggestion tell you about it in his own words:

"A helpful discovery in dopping the more delicate gem materials was the use of an infra-red (medical) lamp for a heat source. A pad of OO steel wool on which to warm the gem, with the lamp pointed at the pad, gives a variable source of heat which can be governed simply by the distance at which the pad is placed from the front of the reflector. It is hard to overheat a gem and the hand can be inserted into the heat ray without danger, to test for temperature on such stones as the fingertip method of testing will suffice. A rheostat placed in the circuit will also give a slower heat."

Mr. Leiper's scheme certainly has several merits which commend it highly even beyond the fact that it provides gentle heat. For one thing, there is no flame and hence greater safety, second, an almost infinite variation in heat is possible, and third, it is an intriguing possibility that some of the infra-red may penetrate transparent materials and generate heat INSIDE the stone. The only suggestion that I can add to the infra-red lamp idea is one that comes to mind from camping trip

cookery, that is the bright metal reflector to throw the rays behind the stone as well as to the front. This may help to heat the stone even more evenly.

In any scheme adopted for dopping we are always confronted by the problem—'when is the stone hot enough to dop?' If we dop too cold, a poor bond is the result and the stone is certain to come off later. Conversely if too much heat is applied there is danger of a cracked stone and the annoyance of juggling a hot stone in a mass of fluid wax. The best indicator I know of to tell the temperature is to place a tiny chip of wax atop the stone while it is heating. When the wax chip melts, the stone should be removed at once and dopped. This is fine for facet preforms but for cabs I have a small pot of liquid orange shellac handy and drop a small blob on the top of the heating stone. When the shellac boils violently as the last of its solvent is being driven off, the stone is removed and dopped. The shellac naturally gives a remarkably strong bond to the junction and prevents stones from flying off later. Both schemes are based on providing just enough heat for dopping and no more.

Tubular Inclusions in Gemstones

In addition to the item on infra-red heat, Mr. Leiper also submits the following suggestion on the treatment of gem materials possessing tubular inclusions.

"Here's a tip on cutting and polishing gems which may have tubular inclusions such as are frequently encountered in tourmaline, aquamarine, topaz, and others. Soak the rough in water-glass solution overnight before preforming and then dry under very gentle heat until the water glass is hard. The solution should be almost saturated and used slightly warm. Be sure not to expose the gem to kerosene or other dirty liquids before filling the tubes. This method prevents capillary action from carrying fine polishing materials up the tubes and ruining the appearance of the gem. Cats-eye tourmaline is particularly liable to be harmed if handled carelessly on the saw, grinder, or lap."

AGATE BELT BUCKLE

By LUCILLE SANGER

A medium green, beige, or not too dark brown wool dress or suit can be highly decorated with no other ornament or trimming than a belt of the same material fastened with a sterling buckle set with a red-banded Brazilian agate.

Select a well-banded piece of red Brazilian agate. If a piece can be found with the bands meeting in the middle as shown in Figure 1, so much the better, but this is not necessary. The white bandings should not be too broad nor too prominent; the emphasis should be on the red bandings. Cut the agate the shape shown in Figure 1. It should be 2 3/4 inches long and 7/8 inch wide. The top should be flat and therefore it will have to be polished on the flat top.

After polishing the stone, it should be heat-treated to bring out the rich red coloring. If you are inexperienced in heat-treating stones, instructions may be found for doing this in a back issue of this magazine.

Lay the stone on a piece of 20 gauge sterling sheet and scribe around it. Saw out this piece for the bottom of the bezel cup. Cut a strip of 26 gauge sterling for the bezel, ¼ inch wide and fit it to the stone. Solder it with first joint solder. After it has been soldered, work the stone in and out of it until the shape is well set and then fit it around the *outside* of the bezel bottom. Place a little paste made of tripoli and water on the outside of the bezel joint to prevent its melting when soldered to the bottom. Flux the inside of the bezel well and place small pieces of second joint solder around the inside joint and proceed to solder.

From a piece of 18 gauge sterling sheet saw the rest of the buckle as shown in Figure 2. The legs are 1 3/4 inches long and ¼ inch wide. The central stem

Fig. 1
Agate

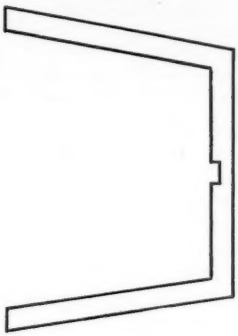


Fig. 2
Legs and stem.

is 2 1/8 inches long and 1/4 inch wide with a 1/4 inch long and 1/8 inch wide nick taken out of the exact center. The legs and the cross piece are sawed out in one piece. When the sawing is done, smooth the edges with a worn piece of 220 silicon carbide grit cloth. Fit the legs to the short side of the bezel and solder, first covering the joint inside the bezel with tripoli paste. Use plenty of solder and smooth the joints on the bottom with a file, then remove file marks with the silicon cloth. Remove all scratches from the piece and place in the pickle.

From the 18 gauge sheet saw out the tongue for the buckle the same shape as shown in Figure 3. Make the tongue 1/4 inch wide and 4 inches long. If a double flow banding in the agate is used, then make the end of the tongue which goes through the cloth eyelet of the belt angular as shown in the top of Figure 3. If the banding is straight or wavy, then use the rounded end as shown in the lower figure. Smooth the edges and remove all scratches with the silicon carbide cloth. Anneal the piece and place in the pickle.

Remove the buckle from the pickle and wash and dry. File the corners down slightly into V's as this prevents wrinkling of the bezel when the stone is set. Smooth the V's with the silicon cloth. Set the stone and polish to a brilliant finish on the electric buff.

Fig. 3
Tongue

Sig. 4
Filed corner.

Remove the tongue from the pickle. Wash and dry. Place it on a smooth flat block of wood, holding one end at a time very firmly to prevent slipping. Hold the tongue to the buff so that it is polished lengthwise. Give a brilliant finish to match the buckle.

With the round nose pliers, bend the square end of the tongue as shown in Figure 3. Place it around the nick of the stem in the buckle and hammer together lightly with the horn mallet to close the open end. Tap the full length of the tongue to restore its hardness after annealing. Attach the buckle to the garment, put it on and hurry to the rockhound meeting.

Soil Testing for Engineers

"Soil Testing for Engineers," a new book written by T. William Lambe, was published in July by John Wiley & Sons.

Dr. Lambe, assistant professor of soil mechanics at The Massachusetts Institute of Technology, first discusses general laboratory procedures and then devotes an individual section to each of the thirteen most common soil tests. For each test, he covers the apparatus and supplies required, a discussion of the recommended procedures, the calculations, results, and a numerical example in which he employs data-calculation sheets.

Of special interest to civil and agricultural engineers, soil testing laboratories and earth scientists, Dr. Lambe's book covers: The specific gravity test, Atterberg limits and indices, grain size analysis, compaction test, permeability test, direct shear test on cohesionless soil, triaxial compression test on cohesionless soil, unconfined compression test, triaxial compression test on cohesive soil and direct shear test on cohesive soil. The appendixes include derivations of the formulas used in the test computations and explanations of calibration procedures and special techniques.

"Soil Testing for Engineers" is a 172-page, spiral-bound volume, and is priced at $5.00. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

THE SAND COLLECTOR

Conducted by PETER ZODAC, Peekskill, N. Y.

Items on interesting sands wanted. Please send them in.

Black Sands

In August 1, 1951, MINERAL INFORMATION SERVICE, (issued by the Division of Mines, Ferry Bldg., San Francisco 11, Calif.) is a most interesting article titled "Black Sands." The following are short extracts from the long article:

"Black Sands" is a term commonly applied to alluvial deposits containing appreciable quantities of heavy, dark-colored iron minerals. Resistance to chemical and mechanical weathering and a high specific gravity are the factors which determine the nature of an assemblage of minerals in black sand. Derived from many different types of rocks, the heavy minerals are carried by streams toward the sea when erosional processes break down the parent rock. It is not uncommon for minerals to undergo several cycles of erosion and deposition before reaching their present stage.

Small quantities of black sand comprising the heavy, hard, and resistant minerals are found in all water-borne sands and gravels.

In general, black sands consist of hard minerals ranging in specific gravity from 3 to 7, mingled with small percentages of metal and metallic minerals ranging from 7 to 20 in specific gravity. The chief commercial value of black sand in California has been the gold, platinum-group metals, and amalgams (native alloys of mercury with gold or silver) found. The dark-colored minerals in black sands, magnetite, ilmenite, and chromite, have been mined intermittently along the Pacific Coast. Other minerals in black sands are garnet, hematite, mercury, olivine, quartz, iron silicates, pyrite, monazite, copper, cinnabar, cassiterite, corundum, zircon, scheelite, and uranium minerals.

Dune Sand From Utah

Some few months ago we received from Frank Beckwith (now deceased) of Delta, Utah, a sample of dune sand which he had collected near Oak City, Millard Co., Utah. This is a fine grained dark gray sand (some grains are well rounded, some 3-cornered, some pitted) and consists chiefly of quartz (brownish, colorless, smoky gray; gray chalcedony), and lava (dark gray and pitted), minor amounts of black magnetite and very small amounts of brownish zircon (fluoresces orange), etc.

Esker Sand From Massachusetts

Arnold M. Dixon, Chestnut St., RFD 403, Foxboro, Mass., informs us that a large esker crosses the path of U. S. 1, just south of Dedham, Norfolk Co., Mass. A sample of the sand collected by Mr. Dixon is grayish, coarse grained, and consists chiefly of quartz of various colors (black, brown, gray, white, colorless), with a minor amount of green tourmaline and a few grains of black magnetite.

Beach Sand From Cuba

Ellis C. Soper, Franklin, N. C., was a recent visitor to Santiago de Cuba, Oriente Province, Cuba, and while there he collected for us a sample of beach sand from the mouth of Santiago Bay (opposite Morro Castle where Hobson sank the Merrimac). The sand is cream colored, medium grained, and consists chiefly of coral (cream colored, white, red) with a few sea shells.

Desert Sand From Arizona

The following letter was received from Walter Reeves, R.3, Greencastle, Ind.:

"To help keep the ball rolling in the sand department, I am sending you a sample of sand my son, Robert, collected in the Yuma Desert (Yuma County), Arizona, near the Mexican border. It is interesting in that some grains fluoresce with a golden glow, very much like wernerite, under a long wave lamp."

This is a fine grained brownish sand consisting chiefly of quartz (colorless, red, brown) with some black obsidian and green olivine. In the sample sent us we could find no fluorescing mineral.

Black Sand From New York

John H. Gibson, 726 S. Highland Ave., Merion, Penn., sends us some interesting notes on black sand he had collected. His letter dated June 19, 1951, reads:

"I have noticed a number of references in R&M to black sand and thought you might be interested in an analysis I made some years ago on a black magnetic sand. The material I collected was from the bed of John's Brook in Essex County, N. Y. After separating out the black grains by magnet it showed the following analysis:

FeO	40.32%
Fe_2O_3	15.83
TiO_2	36.63
Insol. sand	5.02
	97.80

"This would correspond roughly to a mixture of 1 part magnetite and 4 parts ilmenite."

A second letter, dated July 7, 1951, gives information on the locality:

"John's Brook is a famous trout stream originating on the eastern slope of Mt. Marcy and runs about 10 miles to its junction with the Ausable River at Keene Valley. After a dry spell when the water is comparatively low you can travel its full length by jumping from rock to rock, but after a heavy rain it becomes a raging torrent and can only be crossed by a bridge, of which there are a very few. It is the most interesting brook I have ever traveled and while its beauty was nearly ruined by a lumbering operation some 40 years ago the second growth has now largely covered up the damage. The old lumber road still winds along the south bank for about 4 miles until you come to John's Brook Lodge of the Adirondack Club where it joins up with the regular Marcy trail on the north bank. At different places along the brook you find such interesting features as rock slides, sand banks, cascades, ravines, pot hole formations in the bed rock, and if you look into a quiet pool you will note flashes of iridescent labradorite in the gravel bottom.

"The black magnetic sand (sometimes mixed with red garnet sand) collects in patches here and there in the rocky beaches where the brook is widest. It would be difficult to describe any exact location but the sample I spooned up was from a wide rock beach located in the middle of the brook (forming a temporary island) about 2 miles from Keene Valley.

I am not a regular sand collector—but am particularly interested in ores—and do not have any other sand analysis. However, I will keep you in mind if I run across any sands of unusual composition."

Beach Sand From Ohio

During the past summer the Rev. Wm. J. Frazer, 625 Main St., Moosic 7, Penn., did some collecting in Ohio. A few days before he left on the trip, he received from us a few notes on Ohio minerals and here is his reaction:

"—to my surprise and delight I found your good letter with the notes on Ohio minerals.

"Thank you very much for thinking of such a favor. Rest assured I'll "throw" sand in your direction from every place I am able to pick it up or get my friends to do it for me."

We have already received about a dozen different samples one of which is beach sand from Lorain, Lorain Co., Ohio. This beach sand, from the shore of Lake Erie, is coarse grained, dark gray, and consists chiefly of quartz (colorless, smoky, brown, red, gray chalcedony; gray chert) with limestone, sandstone, and schist (all gray in color) with very small amounts of magnetite (black), epidote (green); a few tiny colorless grains of scheelite (fluoresces bluish white); and a few tiny colorless grains of zircon (fluoresces orange).

Magnetite Sand From Rhode Island

On Quanchatague Beach, Washington Co., R. I., there is a nice deposit of magnetite sand and a sample of it was donated by Donald S. Wrathall, 47 Common St., Providence 8, R. I. It is a medium grained black sand consisting chiefly of magnetite (black) with small amounts of garnet (red) and quartz (colorless, brownish).

Volcanic Ash From New Guinea

On Jan. 21, 1951, a most terrible volcanic eruption took place on the island of New Guinea. Long believed extinct Mount Lamington at Higaturu, New Guinea, suddenly erupted causing death and destruction in all directions. The total number of dead may never be known but it is estimated about 3,000. Many homes were destroyed, a town wiped out, and many areas of fertile land became waste land due to the layers of volcanic ash which fell down and hardened.

Mount Lamington, a 6,000 ft. peak 80 miles northeast of Port Moresby, is in the heart of the jungle not far from the Kokoda trail over the Owen Stanley Mountains, along which Australians and Americans fought the Japs early in World War II.

When Mount Lamington erupted, it sent so much volcanic ash into the air that airline pilots said an ashen cloud 100 miles in diameter flattened out at 40,000 feet. Ashes sifted one inch deep on the streets of Port Moresby.

A nice sample of this volcanic ash, which is gray in color and of extremely fine powder, was donated to R&M by Arthur Montgomery of 277 Park Ave., New York City, whose father collected it personally at Port Moresby, New Guinea, while on a visit to the island shortly after the eruption took place.

Flood Deposited Sand

During the past summer there was a most destructive flood in the middle west and especially hard hit was Kansas City. Samples of flood deposited sand have been sent R&M by Mrs. John H. McCarty, 5824 E. 12th St., Kansas City 3, Mo. A letter from her, dated Sept. 21, 1951, reads:

"I am sending you the sand that I told you I'd send. The one marked "Missouri City" is from a small town about 20 miles east and a little north of here. It lies directly on the Missouri River and had quite a lot of water over it—however they were extremely fortunate in that the river had expended some of its fury and there were no houses damaged to the extent that they were in the Armourdale and Argentine districts here. The worst damage at Missouri City (Clay Co., Mo.) was the sand and silt deposited. At the roadside, where the graders had scraped the roads, the sand was about 15 feet deep on both sides. That is about 25 yards north of the river itself. The worst of the flood was over to the south side where it was much lower, but no houses over there. I got the sand on the river bank about 10 feet from the north bank.

"The other sand, which is much coarser, I got about 4 miles back this way, west from Missouri City. It was at least a mile from the regular river channel and in some places we could see drifts of it at least 2 feet tall. That whole area was under water and parts of it still are."

Two samples of sand were received. The one from Missouri City is a fine grained dark gray sand consisting chiefly of quartz (smoky, brownish, colorless) with some black magnetite.

The sample from the locality 4 miles west of Missouri City, is a coarse brown sand consisting chiefly of quartz (brown, smoky, colorless; gray chert), limonite (brown), magnetite (black), and one piece of black asphalt (apparently from some macadam road).

A card dated Oct. 30,1951, from Mrs. McCarty, informs us that the flood occurred July 13 and 14, 1951.

ROCKS

Rocks preach a sermon, strange but true,
They talk to me, they'll talk to you.
And many stories they have told,
Of things so ancient and so old.

Of beauty there's naught can compare
With the beauty of the Opal rare,
Or with the Agate, so serene,
Or with the Malachite's deep green.

They tell of powers, great, untold,
A wealth of wisdom they unfold,
Their beauty rare, their value too,
Without the Rocks, what could we do.

L. E. BAGG,
Peoria, Ariz.

SOME NOTES ON PUNTA ARENAS, CHILE

A most interesting letter has been received from a subscriber located in the most southerly city of South America, Punta Arenas, Chile. This letter, dated Aug. 14, 1951, is from W. T. O'Gara, Paleontologo, Empress Nasional del Petroleo Magallanes, Dept. de Exploraccione, Punta Arenas, Chile.

"Because of the inclement weather (it's winter down here now, with snow and ice) I haven't been able to get out and look around much. But before it got too cold I did take a few short trips into the countryside hereabouts.

"The area of the Straits of Magellan is of Tertiary, Cretaceous, and older igneous and metamorphic rocks and, all partially covered in places by glacial gravels of Quaternary non-marine deposits. There are outcrops of Cretaceous and Tertiary rocks in places and fortunately for us, sufficient to determine the tectonics and structure of the area generally; and some oil has thus been found here so far. The first geological work was done about 1914 by a German named Felsch, later by another, Hemmer, and then by a French commission, Decat & Pommeyrol. They determined some structures and wells were drilled, but the machinery then was not good enough for deep drilling and most of the wells stopped far short of their objectives.

"The most recent work done here was by the United Geophysical Co., Herbert Hoover, Jr., being president, and Glen Ruby vice-president. A great deal of detailed geological reconnaissance was done and some geophysical work as well. On the basis of a structure discovered by seismograph, a well was drilled on the northern part of the island of Tierra del Fuego at the Estancia Springhill, and commercial production was at length discovered here. Other wells in this area were subsequently drilled and some other productive areas found. At present the crude from the Manantiales field, as it is now called, is brought to Bahia Clarence on the west coast of the island by pipe line where it is loaded aboard Uruguayan tankers and shipped to Montevideo where they refine it. A refinery is being constructed now on the island to refine the crude oil, and produce by-products useful locally. At present, production is not extremely large and it is too expensive to ship it to Chilean ports on the Pacific coast for use there.

"Other wells will be drilled in the future on the mainland, or the Peninsula of Brunswick, as it is called. A well now drilling (the El Ganso #1) will be the first deep test on the mainland which will penetrate the Tertiary and ultimately explore a Cretaceous structure. There are many structures visible and already mapped in sufficient detail to warrant a future drilling campaign.

"There are no mineralized areas close at hand, but north and west of Punta Arenas, near a town called Natales, there are igneous intrusions of early Tertiary age which have mineralized the area locally. A large laccolith exists here, and numerous dikes and sills exist also. Stibnite is the ore mineral I have been shown so far as coming from there, and lead and zinc must exist also in the region. There has been no volcanic activity in the Chilean Andean region, and many minerals should be found in this vast southern tract when eventually it is thoroughly explored. I am hoping with the summer weather (Oct.-Nov.-Dec.-Jan.) that I can take a trip up to the Ultima Esperanza district (Last Hope, in English) and explore a bit. Some people here know where some good prospecting areas are, and thus I may be able to report something interesting for ROCKS AND MINERALS.

"I have in mind to write a small article if I can assemble the data. Also one on the Atacama, and Copiopo areas in northern Chile. This southern area is almost unknown at present and has great promise, possibly even producing uranium in quantity, who knows.

"I have collected some pebbles from the glacial drift for you and will send them in the near future. Also have a few sand samples of no particular spectacular

aspect, but of possible interest to you. The pebbles are of igneous and metamorphic rocks and probably transported from the predominantly igneous southwestern Andean area. The Andean diorites are said to predominate there, but granites and schists also are reported. There is a report by a Finn named Krank, which is very good as far the petrology is concerned.

"My work here is micropaleontology, that is the study of the minute fossil foraminiferal shells to be found in the Cretaceous and Tertiary sediments in the Magallanes (Magellan) basin. Fortunately for us they abound in these deposits, and assist us greatly in following the beds from place to place where the outcrops have been exposed by the removal of the glacial till. In some places it is our only means of determining the age of the strata and their position in the stratigraphic column, so that we can determine possibilities for future drilling. I am kept busy all day at the microscope examining samples of residues washed from samples sent in from wells or from areas worked by the field geologists. There is much here that I must learn. I have been reading a great deal about the geology and mineral resources of Chile and Argentina and it is very interesting. Most of it is in Spanish and thus not known to us north of the Rio Grande. I should like to translate and edit some of this material for ROCKS AND MINERALS if I get the time.

"Well, just a few lines to renew acquaintances, and hope that I may hear from you again. Anything I can do for you down here will be a pleasure. I never dreamed when I first subscribed for ROCKS AND MINERALS that I would ever wander so far from home."

Mr. O'Gara's home is in Fort Worth, Texas, and he has been a subscriber for ROCKS AND MINERALS since Sept. 13, 1926. We hope our readers have enjoyed his letter and will watch with much interest for any future notes he may find convenient to send us.

And Our Largest Circulation Is In Calif.!

Editor R&M:

I do not wish to renew my subscription as I do not get enough out of your magazine. For the East it is a good magazine, but I live in the West.

A. Davey
Santa Cruz, Calif.

The Best In The Bunch!

Editor R&M:

Believe me, I get many magazines but R&M is by far the best in the bunch no matter how you compare them.

Irving W. Hurlbut
Davenport, Iowa

Aug. 18, 1951

A "ROCKHOUND'S" PRAYER

If I get up to heaven,
I know I'm going to stare
And hope to view through pearly gates
The answer to my prayer.

Let me not see celestial streets
All paved with glittering gold;
But may I find Swift River there—
It's waters running cold.

Where, with ne'er a hurry,
Nor worry about clime,
I may stay contentedly
To "pan-away" my time.

And please, no harps and flowing robes!
Just dungarees will do;
And hear the birds' sweet chorus
All the long day through.

May the deeply wooded hills
Have pits and mines galore,
Where I can dig with "rockhound" friends
For minerals by the score.

I'd never ask for big "finds."
But contented would I be,
With just friends, and rocks and minerals
For all eternity!

Natalie S. Butler

AERIAL PROSPECTORS REPORT SEVEN MORE POSSIBLE IRON FORMATIONS IN N. MINNESOTA

Minneapolis, Minn.—Discovery in northern Minnesota of seven extensive belts of high magnetic attraction which possibly indicate iron-bearing rock formations was disclosed Friday (Sept. 21,1951) by the United States Geological Survey and the Minnesota Geological survey.

Announcement of the find was made along with the public release of seven additional maps based on the aeromagnetic survey of approximately 45,000 square miles in the northern half of the state which has been underway since 1947 as a joint project of the federal agency and the Minnesota survey.

Maps released September 21st cover all of Lake of the Woods county and parts of Koochiching, Beltrami, Roseau and Clearwater counties—an area of about 6,000 square miles. Previous maps of the aerial survey included some 25,000 square miles and indicated potential iron formations in Itasca, St. Louis, Cass, Hubbard, Becker, Otter Tail, Morrison and Aitkin counties. Mining companies are now exploring several of these indicated formations in a search for commercial iron ore.

Dr. G. M. Schwartz, director of the Minnesota Geological survey and professor of geology at the University of Minnesota, September 21st., reported the seven new discoveries in the aerial "treasure hunt" for iron resources as follows:

1. A wide and irregular belt extending from the Rainy river east of Baudette in a generally southwesterly direction for about 40 miles. This area ranges from two to six miles in width and is located in the Big Bog country north of Red Lake. "We don't know exactly what this band of high magnetic attraction means geologically," Dr. Schwartz said, "because there are no significant rock outcrops in the bog country to give us a hint as to the nature of the underlying rock structure. Extensive exploration by core drilling will be necessary to ascertain the make up of the sub-surface formations."

2. A band 30 miles long and roughly five miles wide in Koochiching county running southwest from the vicinity of Indus to the Lake of the Woods and Koochiching county line where the formation appears to end abruptly. One of the highest magnetic intensity readings yet obtained in the aerial survey was found in this formation, Dr. Schwartz revealed. The high reading, 15,000 gammas of magnetic intensity, was recorded in Township 158 North, Range 27 West in Koochiching county, he reported.

3. A strip 18 miles long and one mile wide beneath the bed of lower Red lake in Beltrami county. This indicated formation extends from the northeast corner of the lower lake near Ponemah to the west shore.

4. An area 30 miles long and up to four miles wide running in an east-west direction along the south shore of lower Red lake.

5. A hook-shaped formation about 20 miles long by two miles wide in southwestern Koochiching county north of Mizpah.

6. A long, narrow belt, 22 miles long by about one mile wide, lying in an east-west position in east central Koochiching county.

7. A short band 10 miles by two miles in Koochiching county just south of International Falls. Dr. Schwartz believes that this band may be the eastern end of an eastward extension through Canada of the formation indicated just south of Indus (No. 2 above).

The seven new maps outlining these promising areas were placed on public display September 21st., at the office of the Minnesota Geological survey, Pillsbury Hall, University of Minnesota, Minneapolis; at the office of the United States Bureau of Mines, Federal building, Duluth; and at the office of the Division of Lands and Minerals, Hibbing.

Beginning October 1, the aerial prospectors will direct their search for new

Minnesota iron deposits to the northwest corner of the state where they will record the magnetic pattern in a 6,900-mile area including all of Marshall, Pennington and Kittson counties and part of Rosseau, Red Lake and Polk counties.

Another prospecting expedition over an area in the Superior National Forest in northeastern Minnesota is also planned for this fall, according to Schwartz. The district to be covered includes the location in which recent discoveries of copper and nickel ores have been reported.

Used in the survey work is an instrument known as the airborne magnetometer, nicknamed the "doodlebug", a device which detects and records variations in the earth's magnetic intensity while being flown by an airplane over the survey area at an altitude of 1,000 feet in paths one mile apart.

Enclosed in a bomb-shaped container, the magnetometer's detector unit is suspended on a long cable from a specially equipped airplane operated by experts from the United States Geological survey. The recording device is carried in the airplane cabin. The instrument is similar to a device developed during the World War II for detecting submerged submarines from the air.

In addition to their value in locating and outlining possible iron formations which may contain valuable deposits of iron ore, the maps and data based on the aeromagnetic survey are of great value in determining and understanding the geology of the state, Dr. Schwartz explained.

Dr. Schwartz emphasized the necessity of checking the results of the aeromagnetometer reading by means of careful ground surveys and core drilling in zones which appear "promising" before making any predictions as to the existence in these areas of commercially interesting iron deposits.

OBITUARY NOTICES

It is with sorrow that we report the passing of the following mineralogists.

FRANK J. CAMPBELL

Frank J. Campbell, of Waterford, Mich., was instantly killed on Sept. 9, 1951, when a large boulder (estimated at 2 tons) rolled down on him at the famous Friday Ranch (now known as the Fulton Agate Beds) near Madras, Jefferson Co., Oregon. He was not digging at the time the accident occurred; he and another rockhound, A. W. Hancock, of Portland, Ore., were sitting in the shade of the rock, talking, when without warning the huge rock rolled down on him.

Mr. Campbell (72 years of age) was a member of the Old Timers Club and of the Rocks and Minerals Association.

Fred W. Klink
Canton, Ohio

L. H. BRIDWELL

Just as we were going to press, word reached us of the death of L. H. Bridwell, of Forestburg, Texas. Mr. Bridwell, one of our advertisers, died of a heart attack on Oct. 29th, 1951.

HARVEY JULIAN SWANN

Dr. Harvey Julian Swann, 66 a retired school teacher, died on Oct. 18, 1951, at his home near Patterson, N. Y.

A native of Salem, Mass., Dr. Swann had taught for 27 years in Boys High School, Brooklyn, N. Y. He was graduated from Brown University and received a bachelor of science degree at Harvard and a doctorate in philosophy at Columbia.

Surviving besides his wife, Mary, are a sister, Mrs. Thomas I. Fenno, of Essex, Mass., and a brother, Camden J. Swann, of Danvers, Mass.

Dr. Swann has been a subscriber for ROCKS AND MINERALS since Oct. 6, 1927. A small building near his house was converted into a natural history museum in which minerals were especially prominent.

MRS. B. F. NONNEMAN

Mrs. B. F. Nonneman, of Salinas, Calif., died in a San Francisco, Calif., hospital on Aug. 15, 1951. She was a member of the Rocks and Minerals Association for many years and for a number of years was a regular advertiser in ROCKS AND MINERALS.

CLUB AND SOCIETY NOTES

Attention Secretaries—If you want your reports to appear in the March-April issue, they must reach us by February 15th—The Editor.

Mineralogical Society of the District of Columbia

Following is a statement of the activities of the Mineralogical Society of the District of Columbia during the last eight months:

At the February meeting Dr. Frank Schairer talked on minerals and mineral collecting in Connecticut.

A motion picture entitled " Nickel Mining, Smelting, and Refining," was shown at the March meeting.

Another movie, " The Story of Lead," was shown at the April meeting. The revised version of the chapter's constitution was read and approved.

At the May meeting a movie on Arizona was shown.

Mr. William B. Haliday gave a short talk on a Germanium specimen, Mr. French Morgan talked about the Selenite locality at Fort Washington, Maryland and Mr. Charles W. Smith talked on micro-mounts at the June meeting. This was followed by motion pictures on Tin mining in Bolivia. A trip was planned to the Kibblehouse Quarry at Perkiomenville, Pennsylvania.

At the July meeting several members exhibited their best specimens, and a geologist's hammer was awarded to the owner of the best specimen, who, in this case, was Mr. Carl B. Gerber. He exhibited a large and beautiful specimen of calcite.

John D. Atkins, Jr.
502 Bellview Ave.,
Falls Church, Va.

Western Nebraska Mineral Society

A regular meeting of the Society was held Monday evening, July 2, 1951, in the basement of the Chappell Memorial Library. There were 15 members and 1 guest present, Gene Law, of Chappell. After the regular business meeting was concluded, a travelogue was ably given by past-president, A. M. Loafdale, of Sidney. Mr. Loafdale described the wonders of Carlsbad Caverns, the Grand Canyon of the Colorado, Meteor Mountain, the Petrified Forest, the Painted Desert, and the Casa Grande National Park, giving his hearers a historical and geological background of each. His talk was sincerely enjoyed by all present. Following an informal discussion of recent accumulations of various mineral specimens by several members, the meeting was adjourned at 10:15 p.m.

G. W. Brooks
Chappell, Nebr.

Mineralogical Society of Pennsylvania

The Mineralogical Society of Pennsylvania held a Field Trip on Sunday, July 8th, 1951, to French Creek Mines, in Chester County, Penn. When sixty-one rockhounds pounded the old dumps wonderful specimens were forced to come out. It was a hot day. The sun blazed and the stones reflected the heat, so the remaining members of the group adjourned to French Creek Park and told "rock tales" in the cool shade, about the picnic tables.The swap sessions of the trip are exciting and rewarding. The next trip will be to Kibblehouse Quarry on August 19th.

Mrs. Otto Karl Bauhof
352 Church Lane,
Phila. 44, Pa.

FOURTH ANNUAL CALIFORNIA HOBBY SHOW

March 21-30, 1952

Shrine Convention Hall, Los Angeles, Calif.

Los Angeles again will play host to hobbyists from all parts of the country when the Fourth Annual California Hobby Show is presented at Shrine Convention Hall, March 21-30, 1952.

Never before in history has there been such a universal collection of hobbies as will be displayed, according to Fred J. Tabery, Managing Director, 3443 So. Hill St., Los Angeles 7, Calif.

...

"We are especially looking forward to the return of many lapidary hobbyists," Tabery said. "Their exhibits at the 1951 show comprised one of the high spots of the mammoth display."

Only 30% of the 56,000 square feet of space available on two floors is being allocated to commercial firms, Tabery said. The balance is being turned over to non-commercial hobbyists. Signs, backgrounds and other needs will be provided.

More than 100,000 persons attended the 1951 show, doubling the previous year's total and tripling the first year's attendance, Tabery said.

Public and private school teachers and leaders of all major youth organizations were particularly enthusiastic and gained many ideas to incorporate into their programs.

Visitors came from just about every state in the union, and exhibitors came from 34 states at their own expense. More than 50,000 individual objects were shown in 350 displays. Estimated value of the show was $3,000,000. All fields of hobby were represented.

Newark Mineralogical Society

On June 24th, 1951, thirty members of the Society went on a field trip to the clay pits of Sayreville and Parlin, New Jersey, to collect Pyrite and Marcasite nodules.

We arrived at the Sayreville site and started our search on a lower level with very little success. One of our members stepped into a bed of soft clay over his boot top and had to be dragged out by sheer force. Just about this time, we heard a yell from above and saw one of the gang brandishing two baseball size nodules one in either fist. We hastily climbed to the upper level and within two hours everybody had a bucketful of choice specimens.

On the way home we stopped at the Parlin pits and after a diligent search unearthed some small but good specimens of Copolite. Tired, but happy, we headed home.

July Field Trip

On July 30th, thirty-one members and friends of the Society met at the home of Russell W. Leitch in Springfield, Vermont, to learn the details of a five day field trip to the better known localities of Vermont and New Hampshire. After being briefed, our motor cavalcade took off for Vail's Motor Court on route 11 going west from Chester; this was to be our headquarters.

The gang was delighted with the accommodations which included a private shower in each cabin. All the cabins were filled and several members found accommodations close by. Luckily some members brought their camping equipment and the Vails allowed them to camp in their field and use the facilities of the place.

The localities visited in Vermont were: Newfane, Chester, Gassetts, Grafton and Windham. The New Hampshire localities were: the Ruggles mine at Grafton Center, the Palermo mine at North Groton and the Fluorite mines at Westmoreland.

We had a very enjoyable time with excellent collecting, swapping, evening songfests, and community suppers at various restaurants. The Vails cooked breakfasts and packed lunches for us.

A complete account of this trip by Wesley Hayes, one of our members, will be found elsewhere in the magazine.

August Field Trip

On August 19th, sixteen enthusiastic members of the Newark Society made a trip to the old Copper mine at Griggstown, New Jersey. The mine lies on a farm near the historic Delaware and Raritan Canal and hasn't been worked in fifty years.

The club left quite an impression on the mine.

Some good specimens of Malachite, Chrysocolla, Cuprite and a brown radiated Vivianite were found.

It was a lovely day and we enjoyed the winding scenic country roads on the way home.

September Field Trip

At 8:20 A. M. on September 22nd, twenty-six members of the Club left the front of the Newark Museum for a collecting trip to the Siderite mine at Roxbury and the Kyanite diggings at Judd's bridge, Connecticut.

Progress was slow in the Saturday traffic and we arrived at Roxbury station at 11:45 and had lunch on the banks of the Shepaug River.

After eating, loaded with mining tools and packs we climbed the long hill to the Siderite mine. By 4:00 P. M. holes three feet deep could be found on the dump, strongly reminiscent of G. I. foxholes. Pyritohedrons 5/8ths of an inch in diameter in Siderite matrix came from these excavations as well as Siderite crystals, "blackjack" Sphalerite and small specimens of botryoidal Hematite in shing black clusters.

Gerry & Will Shulman
Co-chairmen, Publicity Committee
113 Huntington Terrace
Newark 8, New Jersey

Connecticut Valley Mineral Club

The club had a busy summer with many members going on field trips of their own. The club held the following regular field trips for the members.

May 19th and 20th. Several members joined the New Haven Club on a trip to Franklin, N. J. One was lucky and found a specimen of calcium-larsenite on the old Buckwheat dump.

June 10th. A trip to the Jinny Hill barite mine, Cheshire, Conn., showed that nice specimens are still to be found. Specimens of barite with copper minerals were most common. The West Cheshire trap quarry yielded specimens of natrolite and other minerals. A calcite with a yellow fluorescence has been found here.

July 15th. The Gilsum, N. H., pegmatite localities were visited, but black tourmaline crystals from the Turner quarry were the best specimens found. The members visited the Westmoreland fluorite localities on the way home.

August 19th. The club visited the Bristol, Conn., copper mine and the Roxbury, Conn., siderite mine. The Bristol mine yielded few specimens, but the siderite mine produced nice pyrite and siderite crystals.

Sept. 9th. Jack Kitson lead the club to the Loudville lead mines near his home in Easthampton, Mass. One locality produced some nice wulfenite crystals. Leo Yedlin, the R&M micro-mount editor, found this locality to be very good for micro-mounts.

Oct. 3rd. The members gathered together to swap talk of their summer collecting experiences. John Robinson spoke of his experiences at Pala and other localities in California.

Otto Bartels, Sec.
376 Amostown Road
W. Springfield, Mass.

North Jersey Mineralogical Society

The hills had been hard and steep and high; the pits were deep and wet—or dry;— but enthusiasm shone in the faces of the members of the North Jersey Mineralogical Society as they placed their mineral "finds" on display at the first fall meeting in the Paterson Museum. It was an evening devoted to a symposium on the summer collecting experiences.

Paul Kellinghausen, of Elizabeth, N. J., a veteran collector, was given "first chance" to explain his exhibit. He had a most remarkable collection of marcasite leaf-like formations and pyrite, (fool's gold) from the clay pite of Sayreville, N. J. These crystal aggregates in isometric formation were very fragile looking and beautifully patterned. Mr. Kellinghausen explained that they were formed thousands of years ago in clay which resulted from the disintergration of glacier drift or deposits. He said after the clay is washed out you still find microscopic sand of feldspar, marcasite, pyrite and quartz. He showed a chunk of clay about two inches across that contained a number of marcasite crystals. The pyrites formed ball-like crystal aggregates and were brilliant yellow in color. A large photograph showing eight or more of his fine specimens for study completed his exhibit.

Mr. and Mrs. Henry Mullner, of Clifton, N. J., had vacationed in New England and had the exciting experience in Maine of panning gold. They were far from finding a fortune but there was no mistaking the glittering flakes. Assayed at 24 carat, too. They also displayed purple apatite with green tourmaline, manganapatite, and lepidolite with cleavlandite from Maine; crystals of triphylite, bertrandite with autunite from New Hampshire and well formed beryl crystals, one of which showed manganapatite inclusions from Connecticut.

Carl Wilson, of Mountain Lakes, N. J., recited his experience in collecting in the quarry at Summit, N. J., and showed specimens of epistilbite and heulandite.

Gene Vitali's prize piece was a large cone-shaped specimen covered with crystals of heulandite from Prospect Park, Paterson, N. J. He also had, from this locality, amethyst, agate and quartz crystals. From Connecticut he showed beryl, both golden and aquamarine, of good quality; a specimen of garnet in the matrix and specimens of autunite which produced beautiful fluorescence under ultra violet. In his collection, he also had specimens of near amber, known as copalite, one of which he had polished, from Parlin, N. J.

Wesley H. Hayes of Irvington, N. J., showed triphylite from Ruggles Mine, N. H., and a specimen that was said to be stewartite, showing radiated light-brown crystals from the Palermo Mine, N. H. From French Creek, Pa., he showed chalcopyrite, byssolite and magnetite. From Florida he produced a specimen of silicified limestone; a specimen of beautiful green talc from Windham, Vt., pyrite from Perkinsville,Vt; Calcite from Weston, Ohio., and a specimen of blue-green adamite from Mexico.

Gustave Wendt, of Boonton, N. J., described breaking the large boulder of grossularite garnet at the last outing of the club to Connecticut which furnished nice specimens for the group.

Miss Katherine Kauth exhibited her prize specimen of pitchblend from Branchville, Conn.

Warren Duncan added to his historic collection with a stone fragment of the White House.

Mrs. Olive Weimann spoke on her best ruby find in North Carolina.

Howard Hewitt showed faceted beryl gems from his Merryall Mine in Connecticut.

Plans were laid for a field trip to Sayreville clay pits Saturday, September 15th.

The coming convention of the Eastern Federation of Mineral Societies to be held in Washington, D. C., October 25, 26, 27, was announced. Plans were laid for the Society's participation.

Our meetings are held in the Paterson Museum, Paterson, N. J., the 2nd Thursday of every month, at 8:00 P. M. Interested visitors are welcomed.

Florence C. Hight, Sec.
72 Atlantic Avenue,
Long Branch, N. J.

Flemington Mineralogical Society

During the last part of September, 1951, a group of high school students in Flemington, N. J., met and organized the Flemington Mineralogical Society. J. Kent Perry is president, Morton Metersky is secretary-treasurer, and our chemistry teacher is advisor. We meet once a month in the chemistry lab of the high school on the last Monday. At present there are nine formal members and three prospective members.

On Oct. 21st, we held our first field trip. In the morning we visited Lafayette College, in Easton, Penn., and had the pleasure of going through their mineral laboratory. Not only did we see local minerals, but also a number of beautiful specimens from all over the world.

In the afternoon we visited the famous Williams quarry, located about one mile north of Lafayette College on Route 611. It is now abandoned but cannot be missed as it is right on the left of the highway. Here we collected some nice specimens of serpentine, the rock of the quarry.

We will take anyone interested in minerals on our field trips.

J. Kent Perry
R. D.,
White House Sta., N. J.

New York Mineralogical Club

On Wednesday evening, June 20, 1951, the New York Mineralogical Club held a special social meeting at the Hotel Paris, 752 West End Avenue, New York City, through the courtesy and generosity of Mr. Martin, manager of the hotel and a Club member. An abundance of excellent refreshments was served, and there was an enthusiastic attendance, partly on account of a competition in which members might enter their two best specimens, one collected personally, the other some other way, all to be labelled, seven prizes being offered, inclusive of three door prizes.

Much excitement reigned as the judges examined the exhibits, but it was finally announced that Mr. Theodore Fredericks took first prize of a fine Columbian emerald specimen for his magnetite, Mr. Lee was rewarded with a rare Belgian Congo becquerelite for his large Bedford cyrtolite, Mr. Kurt Segler took third prize of a danburite crystal for his triphylite crystal, and Mr. Yedlin received a splendid witherite for the fine monazite crystal he exhibited. As door prizes, drawn by lot, Mr. Milton Goodglass obtained a pair of head binoculars, Mr. M. B. Alpert an excellent quartz crystal, and Mr. E. Victor Collins a most interesting fluorite specimen.

Mr. Philip R. Cominsky, vice-president of the Mineralogical Society of the District of Columbia, generously donated a special prize for that specimen exhibited found furthest from New York. After a heated debate, this was awarded to a superb specimen of ice from the North Pole, exhibited by Jack Frost, but when the argument was over neither the specimen nor the exhibitor could be found, and it was conjectured Mr. Frost got cold feet and went home early. The whole incident seems incredible, but there were numerous reputable witnesses willing to make affidavits to the facts in this mysterious occurrence.

The regular meeting of The New York Mineralogical Club was held with Mr. Leo N. Yedlin, the new president presiding, on Wednesday, October 17, in Room 403, Schermerhorn Hall, Columbia University, New York City, at 8 p.m., and by tradition was devoted to a symposium on summer collecting experiences, illustrated by the finds wherever possible. It proved to be a veritable "smorgasbord" of delectable specimens, and a particular delight to the jaded eyes of the "arm chair" collectors.

Mr. H. A. Mitchell reported his experiences visiting the reactivated mercury mines of California, exhibiting beautiful cinnabars from the Culver-Baer mine, and Great Eastern mine at Mt. Jackson, Sonoma co., the Sulfur Bank mine and Mirabel mine, Lake co.; also, fine metacinnabar from the Mt. Diabolo mine, Contra Costa co.

Mr. Leonard (Marco Polo) Morgan showed piedmontite from Boyd School, and cuprite and epidote from the Bigham Mine, Greenstone, Adams co., wavellite from the "Phosphorus mine" at Moore's Mill, Cumberland Co., (all localities in Penn.), amber with a green fluorescence from the clay pits near Parlin, N. J., lazulite from the Palermo mine, N. Groton, N. H., and green fluorite from Westmoreland, N. H.

Mrs. Bernadette Marcin entertained the members with a lively account of a collecting tour to the north with her husband in which, after whetting their appetite at some of the famous localities of St. Lawrence co., N. Y., they moved on to the pegmatites of Ontario, there collecting ellsworthite, cyrtolite and hatchettolite at the MacDonald mine, diopside crystals at Bird's Creek, sodalite and cancrinite at the Princess mine, Bancroft, and large allanite and titanite crystals at the Aleck mine at Madawaska.

Mr. Joseph Rothstein detailed his adventures in Maine with emphasis on the Bumpus quarry with its aquamarines and rose quartz, and the black tourmalines to be found at Whispering Pines between South Paris and Bethel.

Mr. McKown reported on the pyrite nodules of Sayresville, N. J., and their preservation under kerosene and/or water.

Miss Evelyn Waite described a new find of agate from the north shore of Long Island near the Setauket Beach Lighthouse at Oldfield Point.

Mr. T. Orchard Lisle exhibited magnificent transparent gems of colorless cesium beryl and rose quartz of 30 ct. each, and reported that specimens from the famous Prospect Park quarry at Paterson, N. J., are temporarily exhausted.

Mr. Victor Pribil described his pilgrimage to the deep south in search of gem material, visiting the famous Crabtree Mountain Emerald mine near Estatoe, N. C., and the ruby and rhodolite garnet area in Macon county, N. C., illustrated by fine cut specimens of his work.

As a fitting climax to an evening packed with the thrill of first hand accounts of collecting, Mr. Hugh Leiper of Austin, Texas, past president of the Austin Mineral Society, gave a fascinating description of the minerals of the Llano uplift, with particular reference to the gem topaz found in Mason co., exhibiting the famous *"The Eye of Texas,"* from Honey Creek, Texas, a marvellous blue topaz of 34.63 ct. Transparent topaz crystals up to 2¼ lb. have been found in this area. Also shown, were two magnificent black opal cabachons from Queensland weighing 25 and 28 ct., whose flashing scintillations of blue, green and violet were microcosms of color.

O. Ivan Lee, Secretary
2684 Boulevard,
Jersey City 6, N. J.

Chicago Rocks And Minerals Society

The first two meetings of the Chicago Rocks and Minerals Society have been interesting and inspiring. Due to our president's transfer to Cincinnati, Ohio, Mr. Claude Towne was nominated unanimously to replace Mr. John Pagnucco.

Mr. E. Goff Cooke introduced Mr. Wm. Ziemer as speaker at the Sept. 8th meeting, when he presented his prize winning colored movie film titled, "Vacation Gateway". Mr. Ziemer, past president of the Metro Movie Club, is a photography hobbyist. His pictures covered parts of Glacier National Park, showing the majestic mountains with many peaks covered with ice and snow, with beautiful lakes, waterfalls, mountain flowers and wild life. Mr. Ziemer's pictures show this beauty, continues northwest through the grandeur of the rugged and scenic Canadian Rockies from Banff, Lake Louise and Jasper Park, Alberta. The very good attendance enjoyed with enthusiasm the lecture and music which accompanied the wonderful pictures.

The display table had interesting exhibits from the Coldevins, the Brentlingers, Mrs. Simone Anderson, Mr. George C. Anderson and the Alberts.

On Sept. 16th many members of the Club enjoyed, "Open House," at the George C. Anderson's home, when Mr. Anderson displayed most of his beautiful rocks and minerals. A delicious lunch was served by Mrs. Anderson. Several remained to see moving pictures taken in Africa by the Anderson's son who is a missionary in the Belgian Congo.

On Sept. 23rd several took advantage of the field trip to Rock Creek Canyon to enjoy a beautiful day and hear Dr. Fleener of Joliet, Illinois, who was guide and guest speaker.

The October 13th meeting featured an illustrated lecture on "Continental Glaciation," by Dr. Bruce Lineburg, head of the Biology Department at Lake Forest College, whose hobbies are photography, paleontology and fishing. He states "That anyone without a hobby is short changed". Introduced by Miss Dorothy Glieser, Dr. Lineburg, a native of Strasburg, Virginia, included in his lecture an interesting comparison geologically of his native state and the east to that of the middle west. His lecture was very educational as well as interesting.

The display table was honored by the exhibit of the prize winning jewelry, designed and made by Mr. and Mrs. E. Goff Cooke. The exhibit consisted of a gorgeous ensemble fashioned from Belgian Congo Malachite set in silver, which won first and second prize at the Amateur Art Jewelry Exhibition sponsored by the Chicago Lapidary Club in July 1950. The beautiful creation set with flowering black obsidian which was judged for the silver work was given first prize and the lovely pink rhodonite pieces received second prize. Also on exhibit with the jewelry and prize ribbons were the two silver trophies received by Mr. and Mrs. Cooke. The Dalzell Memorial Award for the best of the best show complete and the Chicago Lapidary Club trophy was awarded for the best jewelry set. The Cookes deserve the highest praise for these honors which show many hard hours of toil and precision work. We are proud they are members of our club.

Mr. and Mrs. James Davis displayed several beautiful pieces of jewelry with delicate filigree and intricate applique work on silver and set with stones cut and polished by them.

Miss Margaret Gilson showed various nice specimens along with her catalogue to identify each specimen. Mr. Byrd had a few specimens taken from a peat bog a short distance out of the city, which were different from our usual display.

The field trip Oct. 14th to the Strip mines, near Coal City, Illinois, to hunt fossils was well attended from various clubs. The trip was sponsored this year by the Earth Science Club of Northern Illinois, with Dr. Wilson, Dr. Fleener and Mr. McKee as speakers.

We are anticipating a big night Nov. 10th when we will hold our Auction Sale in Jefferson Park Field House.

Bertha J. Alberts, Publicity Chairman
310 Washington Blvd., Oak Park, Ill.

Junior Rockhounds Of Prescott

Junior Rockhounds of Prescott are pictured in a full-page illustration, in color, in the November issue of THE NATIONAL GEOGRAPHIC MAGAZINE. The youngsters help to portray the activities of rockhounds in an article, "'Rockhounds' Uncover Mineral Beauty," by George S. Switzer, associate curator of mineralogy, U. S. National Museum. The many beautiful illustrations are by Willard R. Culver, who visited Prescott last winter in the course of his tour of the Southwest and West.

In the Junior Rockhounds picture Martin Hoffman, president, is shown discussing a rock specimen while the group looks on. The caption states that membership is made up of youngsters from 7 to 15 years of age, and that the club is operated without adult assistance. A large specimen of Oklahoma barite rose stands on the table beside books from the club library. A lamp seen in the picture is used for examining fluorescent minerals; it was bought from proceeds of one of the club's annual exhibitions.

The Junior Rockhounds of Prescott were organized by John Butcher and Larry Bender on September 4, 1946. They number about 40 boys and girls.

Harold Butcher
P. O. Box 937
Prescott, Ariz.

Cincinnati Mineral Society

The Cincinnati Mineral Society held its regular meeting Wednesday, March 28, 1951, at 8:00 P. M. at the Cincinnati Museum of Natural History, Cincinnati, Ohio.

A number of guests were welcomed to our meeting with an invitation to attend regularly and become members extended by president Ralph Clark, Mr. Leavitt Cahall and Mr. Royce King, geology students at U. C., were present. Fred Keitel of Cleves, Ohio, was another enthusiastic visitor. Dr. and Mrs. Gerald M. Friedman, Mr. and Mrs. Harry Wilke of Dayton, Ohio, Mrs. Vera Kennedy, Mrs. Stephany Mrs. Joyce and Kent Sturms, all were guests and we were happy to have them.

Mr. Frank Atkins was appointed as chairman of a committee to consider providing incentive for the Saturday children's mineral classes sponsored by the museum. Warren Wells and Mrs. Clark were also appointed to serve on this committee.

The speaker for the evening, Dr. Gerald M. Friedman, of the department of mineralogy at the University of Cincinnati, was introduced by Mr. Sarles. Dr. Friedman chose as his subject "Corundum," one on which he has done much work and is known as an authority. Dr. Friedman, a very enthusiastic and thorough mineralogist, has made a very extensive investigation of corundum occurrences in the United States. This was a personal investigation and evaluation covering several years of field study and laboratory work of detailed nature.

Dr. Friedman presented slides of thin sections of corundum bearing rocks and formations. These slides depicted the entire story of the origin of corundum and its associated minerals.

The details presented by Dr. Friedman were most authoritive and very clear and concise and of such nature as to make repetition unnecessary in these notes. Thanks to Dr. Friedman for an excellent meeting.

Mr. Harry Wilke of 3243 Ridge Avenue, Dayton 4, Ohio, became a member of our society at this meeting.

April, 1951 Meeting

The regular monthly meeting of the Cincinnati Mineral Society was held Wednesday, April 25, 1951, at 8:00 P. M., at the Cincinnati Museum of Natural History.

President Ralph Clark opened this meeting with a word of welcome to our guests; Mr. Fred Keitel, Mrs. Harry Wilke, and Mr. Harry Woodward.

Frank Atkins, chairman of the committee to set up an incentive program for the childrens mineral classes, reported the following program:

Cost of program not to exceed $15.00 to be used as follows:

1. Purchase of a cost scientific instrument.
2. Credit toward purchase of minerals from Museum.
3. Specimens presented by members.

For the balance of the season it was suggested that a small engraved trophy be presented to the leading scholar, this had to be dropped as classes had already closed for the year.

There followed a brief discussion of the April field trip to the New Point, Indiana, Quarry, and of the material found there and in the Roy Grossman family basement in Batesville, Indiana.

Frank Atkins was introduced as speaker for the evening. His subject "Recent developments in economic mineralogy," covered very effectively all phases of development and futures of the more important minerals and ores necessary to our present day economy.

Principal among these were iron, characterized by a new find in Cerro Bolivar, South America; and development of low grade taconite in Michigan, and high grade iron ores in Labrador. Among others were copper, lead, zinc, tin, silver, vanadium, tungsten, manganese, cobalt, nickel, molybdenum, bismuth and last and least sought after, gold.

May, 1951 Meeting

The regular monthly meeting of the Cincinnati Mineral Society was held Wednesday, May 31, 1951, at the Cincinnati Museum of Natural History.

President Ralph Clark welcomed Mr. Harry Woodward, and Miss Emily Fessenden as guests.

Mr. Frank Atkins was appointed to contact museum officials and effect a satisfactory settlement of payment of fees to the museum. Mr. Fred Keitel was accepted as a member of the society at this meeting.

The main meeting was devoted to a discussion of the minerals collected on the May 20, 1951, field trip to Clay Center, Ohio.

This trip was an overnight trip with collecting on Saturday at a quarry near Bowling Green, Ohio. The quarry, as evidenced by the specimens of the members who visited it, was of some interest.

Minerals found included, barite crystals, white turning to blue on exposure. A combined massive pyrite and marcasite which is quite showy, but shows indications that it will soon deteriorate. Several forms of calcite were noted. Small cubes of clear fluorite with pale purple edges were found. Coatings and thin layers of green glauconite were also present.

Sunday at Clay Center under the expert and jovial guidance of Miss May Dunn, and thanks to the hospitality of the Kelley Island Lime and Transport Co., the collecting was fairly good. Quite a few nice groups of celestite crystals were found, but no large crystals, The characteristic tan fluorite was found but only as small crystals coating the field rock. The writer and Mr. Fred Keitel were rewarded with some excellent sphalerite groups after much searching, and sweating.

The trip was a success both as to the minerals collected and the large attendance.

June, 1951 Meeting

The regular monthly meeting of the Cincinnati Mineral Society was held Wednesday, June 27, 1951, at the Cincinnati Museum of Natural History.

In the absence of Mr. Gschwind, secretary, Mrs. Ralph Clark was appointed secretary protem.

Mr. Frank Atkins announced that a $25.00 retaining membership in the museum association had been taken as partial payment for services rendered in 1951.

Mr. Roy Grossman of Batesville, Indiana, was appointed as official delegate of the society to the Midwest Federation Convention at Houghton, Michigan.

A short discussion was held on the highly successful overnight trip to northern Ohio on June 23-24. Thanks were given to Mr. Gschwind for organizing and conducting five major field trips so far this year. It was revealed that this was a voluntary gesture by Mr. Gschwind as appointment of a field trip committee had never been made.

A motion picture entitled "Crystal Clear" was shown. This film depicted the manufacture of high grade Fostoria glassware. This included the part played by the basic minerals used in the process of glass making.

July, 1951 Meeting

The regular monthly meeting of the Cincinnati Mineral Society was held Wednesday, July 25, 1951, at the Cincinnati Museum of Natural History.

President Ralph Clark extended a warm welcome to our guests, Master Eugene Ostendorf, the delightful Grossman family, Mrs. Maxine Abbott and daughter Linda, and Mrs. Carl Weigand.

Roy Grossman gave us a fine description of the Midwest Federation Convention and spoke particularly of the fine treatment accorded him by convention officials and visitors.

Roy and his family also visited our fine friend, Mr. Howard Jackson of Cloquet, Minnesota. They collected thomsonites and agates along Lake Superior. A visit to the Crosby iron mines added binghamite to their specimens. At Mazon Creek, Illinois, fossil ferns and rushes were found; at Rockton, Illinois, glauconitic sand. Roy presented many fine specimens to the group.

Carl Weigand spoke briefly of a trip to Gold Point, Nevada, and promised a full talk complete with slides of this trip at a later date.

Harry Woodward visited Franklin, New Jersey and returned with many fine specimens; Harry gave many of these to our members.

Mr. Edgar Sarles visited Rome, New York. Then down to Washington, D. C., to visit Dr. Benn, Dr. Bassler and Dr. Foshag, at the National Museum. He spent a day at Chesapeake Beach to collect fossil shark teeth but instead wound up collecting black sand consisting chiefly of ilmenite with little or no magnetite in it.

Mr. Joseph Tressell, our clever silver craftsman was introduced as speaker for the evening. Mr. Tressell chose as his subject "Antique Silver, its manufacture and identification." This was the second in a series of three talks on silver throughout the ages.

Mr. Tressell was at his usual highly entertaining level which together with his excellent dry humor made for a fine evening of entertainment and instruction.

Mrs. Vera Kennedy and Mr. Harry Woodward were accepted as members at this meeting.

Charles L. Gschwind,
6931 Diana Drive
Cincinnati 24, Ohio

Washoe Gem And Mineral Society

The Washoe Gem and Mineral Society exhibited collections at the First Reno Hobby Show, October 6 and 7 in the California Building at Idlewild Park, Reno, Nevada, under the auspices of Reno Hobby Show Association.

The interests of the members of the club were demonstrated through the active participation at the show as well as the selection and display of materials. The colorful exhibit included local specimens and also outstanding crystallized minerals from many other sections. Members contributed their prize specimens of minerals, fossils, petrified wood, cut and polished stones and finished silverwork

Many who viewed the exhibit were particularly impressed with the Virgin Valley opal collection and the original designs used in mounting the "Fiery Stone." The number one question "What gives the opal its fire?"

The Indian artifact collections exhibited by Mr. and Mrs. H. F. Regan and the C. D. Lair families were an inspiration to many new as well as old collectors, to roam the ancient Indian Campsites. Arrow-heads, hunting and utility implements were on exhibit from Honey Lake, California, Spanish Springs, Lovelock and Washoe Lakes in Nevada.

A new club composed of hobbyists who gather Indian artifacts has been formed as a result of the Hobby Show.

To select the most interesting exhibit would be difficult, but the sincere and co-operative spirit of a society not yet two years of age can be mentioned with enthusiasm. The interest shown by the 2500 visitors could well be an inspiration to every potential collector to exhibit their prize specimens.

Gladys Hamm
Publicity Chairman
Washoe Gem & Mineral Soc.
Box 272, Sparks, Nev.

Los Angeles Lapidary Society

Dr. Richard H. Swift, Fellow and Past President of the Academy of Natural Science, gave an informative lecture on "The Glyptic Art of the Greeks" at the July meeting of the Los Angeles Lapidary Society.

He demonstrated his talk with several pieces of equipment that were used by the Greeks for Lapidary Work. With this we were privileged in seeing some of his collection of Cameos, Intaglios, and other interesting pieces of Jewelry and carved works dating as far back as 2500 B.C. The materials used by them were about the same as we use today, except for sapphires which came into use much later

Herbert Monlux one of our Society members demonstrated his Automatic Gem Drill, which turns off automatically when hole is drilled.

Plans are being formulated for the Society's annual picnic to be held Sept. 16 at Big Fireplace number four at Griffith Park, Los Angeles, Calif.

August Meeting

The Los Angeles Lapidary Society has accepted an invitation to display some of their work at the Los Angeles County Fair at Pomona, Calif., September 14 through 30th. They will also have a representative display in the Rockhound Fair at Compton, Calif., September 29th and 30th.

Victor M. Arciniega lectured on the origin of Thundereggs, Geodes, and Agates at the August Meeting. He explained how they were originally formed, the processes that take place to form the crystals in Geodes, the different inclusions in Thundereggs and the color and different patterns in Agate.

He recmmended to the members that they learn more about the materials associated with Agates, Thundereggs and Geodes, as a clue, so new locations could be readily recognized.

Claire Schroeder, Pub. Chairman
P.O. Box 2184, Terminal Annex
Los Angeles 54, Calif.

Los Angeles Lapidary Society

The Los Angeles Lapidary Society's guest speaker at their October meeting was Raymond Addison from San Jose Lapidary Society, who gave an informative lecture on "The Art of Cameo Cutting."

He told of how he became interested in the hobby and of the many experiences he has encountered in convincing people that he actually does cut the cameos, and that he does not use trick photography or any other method, except engraving tools and many hours of "patience."

He showed the King Helmit shell he prefers to use and demonstrated how to hold the tools, and how he creates the lights and shadows on his subjects. He also displayed his wonderful collection of Cameos and a piece of Jade that he is carving, but has not as yet finished.

To help the youth of Los Angeles to have fun and a safe Halloween, the Society will sponsor a booth at the Van Ness Playground Carnival.

Claire Schroeder, Pub. Chairman
P. O. Box 2184, Terminal Annex
Los Angeles 54, California.

Tucson Gem & Mineral Society

Summer activities of the Tuscon Gem & Mineral Society were very interesting. On may 1st, George W. Baylor spoke on oddities found in the desert and showed many unusual pieces. On May 15th, a movie "California Comes Through," was shown. On June 3rd, projects of the past, present, and the future were discussed. On June 19th, an interesting talk by Charles E. Woodell on carborundum was given. On July 3rd, Mrs. Henry George talked on her projects in the East and what she has contributed to the Friends Society. On July 17th, Samuel F. Turner, former president of the society, talked on ground water problems of Arizona. Mr. Turner is the District Engineer of the Ground Water Branch of the U. S. Geological Survey. A field trip to the Duquesne mining area was taken July 15th. On August 7th, Munroe S. Edmondson spoke on "The Blue Lizard, The Golden Man, and The Lost Dutchman," topics of great interest, tracing legends and the origin of names to ores and gems. On August 21st, movies were shown and a regular business meeting was held. On Sept. 4th, Mr. A. L. Johnson, Field Engineer, gave a talk on the Government's plans for the small miners of Arizona. On Sept. 18th, Fred G. Hawley gave an interesting talk on "The Little Prehistoric Bells of Arizona and Mexico, and together with Mr. Normart, Vice-President of the club, gave an illuminating talk on tungsten ores. On Oct. 2nd, movies on magnesium — "Treasures of the Sea," courtesy of the Dow Chemical Co. and "A Story of Copper," courtesy Phelps Dodge Corp. were shown. Meetings are the 1st and 3rd Tuesday of each month, visitors are always welcome.

Pub. Chairman.
David P. Record
4400 So. Mission Rd.
Tucson, Arizona.

Mineralogical Society of Utah

The 1951 officers of the Mineralogical Society of Utah are: W. T. Rogers, President; B. W. Bennion, Vice-President; Mary Moorhead, Treasurer; Ora Rew Alt, Secretary.

Meetings are held the first Tuesday of each month and field trips the third Sunday of the month.

Ora Rew Alt, Sec.
424 "A" St.
Salt Lake City 3, Utah.

Chattanooga Rocks And Minerals Club

The April meeting on the 10th was held at the home of Prof. and Mrs. B. K.MacGaw. Mr. Baynard Smith, Jr., had the program, his subject being Fluorescent Minerals. At the conclusion of his talk, members and guests enjoyed refreshments and a social hour.

May Meeting

At the meeting of May 15th held in Room 108 in Brock Hall, University of Chattanooga, Chattanooga, Tenn., Mr. T. Walter Brown devoted his program to Garnets. Mr. Brown formerly did geological work for the Union Oil Company in Colorado and Manitoba, and handled his subject in an expert manner.

June Meeting—Cancelled
July Meeting

The regular meeting was held July 10th in Room 108, Brock Hall, University of Chattanooga. At the May meeting it was decided that the Club should make a study of quartz, taking up a different phase at succeeding meetings. At this meeting Geo. C. Olmsted discussed the historical importance of quartz and illustrated the temperature effects.

The evening of July 17th the Club enjoyed the hospitality of President and Mrs. Hans Thurnauer at an outdoor supper. According to taste, men, women, and children talked, gossiped, played horseshoes, built castles in sand piles or got dunked in the pool. After things quieted down, a delicious and bountiful supper was served. When sufficiently dark, a movie of high temperatures thru the microscope was shown. It was a most unusual film to show crystals in the act of forming at 4000° F. The film is the property of the Carborundum Company.

September Meeting

A meeting was held Tues. September 11th at 7:30 p.m. in Room 108, Brock Hall, University of Chattanooga. Mr. Hans Thurnauer, Club President, told of his recent trip to the feldspar and mica mines at Spruce Pine, N. C. From this same area pottery clays have been exported to England. Following his excellent talk, Prof. B. K. MacGaw discussed his visit to the famous asbestos mines in Quebec Province, Canada, and to mica mines in New Hampshire. After the Club examined specimens brought back by both speakers, a resolution of congratulations to Mr. Thurnauer was unanimously adopted for the certificate of appreciation he had received that morning at impressive ceremonies by the U. S. Army in token of his outstanding work in ceramics for the armed forces. Mr. Thurnauer is vice-president and director of research for the American Lava Co., of Chattanooga.

September Field Trip

Three cars of Club members went to Georgia, Saturday Sept. 15th, picked up a few crinoid stems near Ringgold, Ga., then continued on to Chatsworth where the Southern Talc Company was visited. Our party was courteously shown thru the mill and laboratory and was given a free hand to pick up specimens. Since the mine was but two miles up the mountain, we soon arrived there. After inspection and lunch, it was decided to go to Fort Mountain. On top of this mountain, now a State Park, are extensive fortifications of tumbled-down stone walls whose origin is a complete mystery. Perhaps Indians built them. One theory has it that ancient Welch explorers before Columbus lived here. The elevation is about 2800 feet. The day was perfect, not too hot, not too cold, no rain, no dust—swell eats.

Geo. C. Olmstead, Pub. Comm.
1129 James Blvd.,
Signal Mountain, Tenn.

The Queens Mineral Society

The May 4th, 1951, meeting of the Society was held as usual at the Church of the Resurrection, 8501-118th St., Richmond Hill, N. Y.

The meeting was called to order at 8:15 P.M. Minutes of previous meeting read and corrected. After a business meeting and recess we had a talk by Mr. Leo Yedlin on Micro-Mounts. He showed us various methods of mounting specimens. He exhibited different kinds of boxes used in mounting micro-mounts, including a few antiques used by the earlier collectors. He also explained the advantages of micro-mounts over cabinet specimens. A few thousand specimens can be stored in a comparitively small space, also the perfection of the micro-mounts that can be found at localities where cabinet specimens have not been found in years. After his talk members had the opportunity to examine his equipment and very very pleased with the specimens he exhibited and those he distributed.

June 8th Meeting

The meeting was called to order and the minutes of the previous meeting read. A motion was made and seconded electing Messrs. A. Malcolm, Louis Sandhop, Jr. and Ernest de Popper to membership and duly carried. It was agreed to reinstitute having the club carry the membership of our members in the service.

After a recess we had a talk by Mr. H. Allan Mitchell on 'The Geysers'. The place known as 'The Geysers' is about 100 miles north of San Francisco. They are not geysers but hot fumaroles, the temperature at the top is about 450 degrees. The place was first located in 1850. In 1852 it was known as a health resort. Ammonium alum salts, Epsomite, small capillaries of Opal found there but no Geyserite. Mr. Mitchell illustrated his talk with pictures taken of 'The Geysers' and included other pictures of interest. After a lively discussion and a rising vote of thanks to Mr. Mitchell, the meeting adjourned.

Mrs. Ethel B. Woodward, Sec.
3413-80th St.,
Jackson Heights 72, N. Y.

Yavapai County Archaeological Society

Bones of a mammoth of the Pleistocene epoch were unearthed by members of the Yavapai County Archaeological Society in a field trip to the Walnut Grove area on Sunday, September 2, 1951. The expedition was led by Aubrey Gist, of 226 North Pleasant, Prescott, who originally discovered the fossil animal's teeth, now part of the treasurers of the Museum of Northern Arizona, Flagstaff.

In the party of 21 members and friends were Dr. Charles A. Anderson, district supervisor for Arizona and New Mexico of the U. S. Geological Survey, and Dr. Medora H. Krieger, also of the U. S. Geological Survey, and who is surveying the Prescott quadrangle. Professor Edwin D. McKee, of the University of Arizona geological department, who had hoped to be present, was unable to reach Prescott from Durango, Colorado, in time.

The teeth found previously by Aubrey Gist were in good condition and enabled Dr. John Lance, of the University of Arizona, to identify them as belonging to a mammoth. On Sunday's trip Dr. Anderson said that mammoths were at one time quite prevalent in what is now Utah, Arizona, New Mexico and Texas. This mammoth was the *Archidiskodon,* or "imperial mammoth," which roamed the dry plains of the southwest. The *Mammonteus,* or "woolly mammoth," lived farther north, nearer the glaciers of the Ice Age in which both kinds of mammoth lived.

Geologically speaking, the mammoths come close to our own times. Although the Pleistocene epoch lasted two million years, the end of the epoch occurred in recent times, only thousands, not millons, of years away. To this epoch, when ice made four big advances, covering four million square miles of the American continent, belong Heidelberg, Neanderthal and Cro-Magnon man.

Sunday's exploring party soon realized that the complete skeleton of the mammoth no longer existed. On the surface fossilized bones were scattered. Just below, already disintegrated a tusk appeared. A little digging revealed four discs of the backbone, practically intact, just as they fitted into one another in the body of the monster. When shellacked, these will be preserved.

No further work was done on the site, which gave no immediate indication of any more remains. So much has happened in thousands of years that the portions found may be the only survivals or the rest of the skeleton may be elsewhere. In any case, when the mammoth perished his body was quickly covered with dirt and debris that protected it from the ravages of water, wind and weather. At one time it may have been buried one, two or more hundred feet deep, remaining there until erosion exposed it to the gaze of Aubrey Gist, a keen observer of the Holocene epoch.

In the same general area Mrs. Medora Krieger found many fresh water mollusks in crumbly clay, fossil survivors of tiny invertebrates that lived in prehistoric pools and ponds. Near the mammoth bones, too, the mollusks were found, evidently existing at the same time as the mammoth—not more than, say, thirty or forty thousand years ago.

Also visited in the vicinity were banks of volcanic ash similar to that of the Milk Creek area where bones of ancient camels and horses have been found.

In addition to those already mentioned, the field trip partly consisted of Harold Butcher, president of the archaeological society; Ernest E. Michael, president of the Yavapai Gem and Mineral Society; Mr. and Mrs. Floyd Purviance and Gary, Roy R. Kuntz, Mr. and Mrs. Hugh Vaughn, Mrs. Madeline Bettencourt and Lauren, Mrs. Aubrey Gist, Clifford Birkholz, John Butcher, Mrs. Mabel Allen, Mr. and Mrs. Eugene Neuman and Mr. and Mrs. Bartlett Jones.

Harold Butcher
P. O. Box 937
Prescott, Arizona.

Whittier Gem and Mineral Society

At the June 5th, 1951, meeting a film *The Story of Copper,* was shown. Jack Swartz gave a talk on the copper minerals,bornite and chalcopyrite. Each one present was given a sample of these minerals. This feature, which will be repeated in connection with other mineral meetings, is an interesting one and will help members in the recognition of the minerals. Mr. Swartz's informative talk will be written up in the bulletin.

On June 19th Mr. O. C. Smith, author of the book, *Identification and Qualitative Chemical Anaylsis of Minerals,* spoke to the society on the identification of minerals. He pointed out that this is not difficult and can be carried out by anyone with an inexpensive set of chemicals and a few pieces of apparatus. He also gave a demonstration of the use of the blow pipe.

The meeting of July 3rd was mainly a business meeting. Bill McInninch gave a report on the Oakland Show. We were informed, among other things, that our Lapidary and Mineral Exhibit won 2nd prize.

July-August-September Meetings

Two of the meetings in July and August were held at homes of society members. At the September 4th meeting Mr. Edwin Roth gave an excellent talk on copper minerals. At the conclusion of the lecture the members were privileged to inspect the many rare and beautiful specimens from his collection.

The meeting on September 18th was devoted mainly to a discussion of the forthcoming Gem

and Mineral Show which is to be held October 20th and 21st at York Riding Club House, one mile south of Whittier Blvd. on Santa Fe Road. Admission is free. There will be door prizes and grab bags as well as exhibits by members. A number of dealers in this vicinity will be on hand and refreshments will be served.

O. L. Stevenson
10722 Rose Hedge Dr.,
Whittier, Calif.

Yavapai Gem And Mineral Society

When Ernest E. Michael entered into office as president of the Yavapai Gem and Mineral Society at the monthly meeting of the society held in St. Luke's parish house, Prescott, Arizona, Sept. 4, 1951, this was the second time he held this position. He succeeded Roy Kuntz, who had just concluded a successful year.

Ernest Michael and his wife (who also held office as secretary-treasurer) have been keen rockhounds for many years. From picking up shells and pebbles at Pescadero, California, they progressed to a genuine knowledge of minerals and gem stones. They are now regular exhibitors at the major shows of the Southwest and West. In addition to an outstanding rock collection, Michael has 5000 sea shells gathered in the course of his travels; they have come from such countries as South America, England, France, Italy, Africa and the West Indies.

Michael is recognized by his fellow rockhounds as an authority on the gems and minerals of Yavapai county. He was recently appointed superintendent of the mineral exhibit at the County Fair, due September 21-23.

In office with Ernest Michael during the coming year will be Floyd Purviance, acting as vice-president. The new secretary is Mrs. Madeline Bettencourt.

At the September meeting Bob Ames, popular radio commentator and prospector, stressed the value of a good exhibit at the Fair. He had noted a greater interest in the minerals of the county. People were coming from the outside to investigate mining properties, making unexpected discoveries.

Vice-president Purviance conducted a rock quiz. Four seniors — Mrs. O. D. Horton, Floyd Getsinger (visiting from Phoenix), H. G. Porter and Eugene Neuman—tied for first place, answering the six questions correctly. On the draw the prize went to Neuman. Winner of the junior prize was Sherman Ferris. Mrs. Floyd Purviance and Jacqueline Ferris won the door prizes.

New members admitted were Clifford Birkholz (Prescott) and Myrtle M. Fees (Whipple).

October Meeting

Around 5000 people saw the mineral exhibit of the Yavapai Gem and Mineral Society at the County Fair, according to the rough estimate of Ernest E. Michael, president. Reporting to the members at the monthly meeting held Tuesday, October 2, in the parish house of St. Luke's Church, Prescott, he described the good impression made by the exhibit. Many people had been unaware of the beauty that existed in minerals and rocks.

That beauty was further exemplified in the colored slides presented at the meeting, John Ludwig acting as projectionist. The richness, color and variety of the quartz family brought forth exclamations of surprise and appreciation from the audience. These slides were made from the specimens in the collection of Scott Lewis, Hollywood, California.

Michael announced that plans were being made to start a lapidary school in Prescott, consisting of a ten-weeks course, once a week. Further details would be announced later.

The society expressed sincere thanks to Mrs. Hugh Vaughn for her able editing of the "Yavapai Rockhounder," the society's news sheet. The Vaughns are leaving this week for Durango, Colorado. Appointment of a successor is pending.

A field trip to the Mule Shoe country is planned for October 21. It will be conducted by President Michael or H. G. Porter.

Prizes, presented by Mr. and Mrs. Porter, went to Eugene Neuman and Don Kentch and I. A. Mabey and Sherman Ferris (quiz).

Harold Butcher
P. O. Box 937
Prescott Arizona.

Southwest Mineralogists

The Southwest Mineralogists, Inc. held their regular meeting July 9, 1951, with the new officers taking over. The new officers being: President, Clieve Zehrbach; Vice-President, Arthur Rich; Recording Secretary, Ruth Bailey; Treasurer, Cora Standridge; Corresponding Secretary, Marion Thomas.

Mr. Victor Arciniega spoke on Uranium Minerals and Nebular Physics. He also had his Geiger counter with him and gave a demonstration on the reaction of Uranium Minerals when put in contact with it to tell just how "Hot" the specimen is.

Displays by members were as follows: Dr. Foster, Scandinavian Minerals; Mr. & Mrs. Rich, Various Minerals; Gold Cup winners of the Oakland Show displayed their winning exhibits, Mr. Gustafson, Glass replicas of the 12 largest stones cut from the Jonker Diamond; and Mr. & Mrs. O. C. Barnes with their Onyx Dinner Set.

Marion Thomas
Corresponding Secretary
5575½ Via Campo
Los Angeles 22, Calif.

Pacific Mineral Society

Mr. Robert McLeod, Curator of History and Anthropology at the Los Angeles County Museum, brought the story of the Barranca de Cobre "The Grand Canyon of Mexico" to our July meeting.

Mr. Ariss recently visited the Barranca with a party of experts, and his colored pictures and vivid descriptions made us feel the rugged beauty and primitive conditions.

He showed the Tarahuma Indians mining Gold and Silver by the most primitive methods, grinding with metates.

The area covered was of Miocene or middle Tertiary, and of igneous origin, with no sedimentaries or metamorphics noted.

Dr. Foster, display chairman, presented Mr. Edwin T. Roth, and his outstanding collection of rare copper minerals.

The State Convention was attended by a dozen members who found it very worth while.

August Meeting

Mr. Victor A. Arciniega, Mining Engineer and our first President, talked to us about prospecting for rare earths at our August meeting.

The idea of the possible helpfulness of the Rock Hounds in finding the materials for the invaluable isotopes for future power, for defense and for chemical and medical research, fires the imagination.

Mr. Arciniega suggested clues in the black acicular forms in the pegmatites, the red color as in the metahewittite of the Colorado Plateau, the canary yellow of Carnotite, and of course the black of Pitcheblende and others.

He demonstrated the response of the Geiger counter to Thorium, Carnotite and other minerals noting the intensity and the intervals. We were alerted to the fact of the wide distribution of rare earths, second to copper, and ten times as prevalent as Zinc, but unpredictable, in minute quantities, uncertain depths and places, and in any number of combinations.

The waste from the Vanadium mines has proved a valuable source.

The Samarskite of South Africa with its 12% U_3O_8 is associated with Thorium, Tantulum, and Columbiam. Autunite, Tobernite and Gummite dominate in Argentina. In Greenland it is associated with galena and silver. Sometimes the forms are crystalline and again non-crystalline as in Nivenite.

Mr. Flynn and Mr. Roth kindly exhibited some fine minerals from South Africa, Canada and South America demonstrating our subject.

Tungsten, Epidote and Smoky Quartz are the objectives of our next field trip to the Kernville area.

B. Boyer
1234 W. 41st St.,
Los Angeles 37, Calif.

Pacific Mineral Society

Mr. William E. Phillips was good enough to bring to our October meeting gems of unusual size, depth of color and finely cut from his private collection. His account of the round the world trip in the interest of this collection was vivid and informative.

Mr. Phillips is a well known Los Angeles dealer, and well informed.His account of his brown diamond altered to green by the University of California cyclatron was intriguing.

A group of fourteen stones was displayed and he challenged us to identify them. A deep yellow Zircon of 121 K, a Siberian Amethyst 75 K, and green Opals of unusual color, were fine items.

Mr. and Mrs. A. E. Allard spent their vacation collecting in Montana and good specimens of Rhodochrosite, Amethyst and Rhodonite were exhibited among many other items.

Dr. Foster's display of Chalcotrichite was outstanding. The delicacy and variety of the forms and colors was most unusual.

The Pacific's next field trip is to Darwin, which is usually rewarding and worth while.

Mrs. L. A. Royer
1234 W. 41st St.,
Los Angeles, Calif.

Santa Cruz Mineral & Gem Society

The Santa Cruz Mineral and Gem Society resumed its regular meetings Wednesday, September 12th at the Soquel Congregational Church Hall, after a two months summer recess.

The roster of new officers is as follows: Carl Becker, President; Capt. Harry A. Reed, Vice-President and Program Chairman; Alice Everett, Secretary; Hugh S. Baird, Treasurer.

Wilson E. Thompson our out-going President, is now a Federation Director.

Rose M. Baird
Publicity Chairman
622 Walnut Ave.,
Santa Cruz, Calif.

There Is Only One—R & M!

Editor R&M:

Being an occasional reader of six best known U.S. magazines on mineralogy for some years, copies of which were sent me irregularly by friends in your country, I would now like to become a subscriber for the most interesting one. My choice fell upon R&M, but to make sure I asked a very good friend of mine, a gem cutter recently returned from California about his opinion, without mentioning my choice. His answer was: "They are all fine magazines, and each has its point, but for you there is only one—ROCKS AND MINERALS".

Joaquim Unterman
Sao Paulo, Brazil

Aug. 30, 1951

BIBLIOGRAPHICAL NOTES

MINERALOGY — An introduction to the study of minerals and crystals, by Kraus, Hunt and Ramsdell.

The 4th edition of this well-known textbook made its appearance on Aug. 16, 1951. The new volume shows a considerable expansion of the material on optical mineralogy, crystal structure and x-ray analysis, gems and precious stones.

It is 15 years since the 3rd edition was published and which went through 13 impressions. Since that time, so many significant advances have been made in the general field of mineralogy, that the 4th edition had to be thoroughly revised and brought up-to-date. A selected bibliography has been added. The illustrations have been improved and new ones introduced; they now total 735. The entire book has been reset.

Some special features of *Mineralogy* are:

—the first book in English to make extensive use of half-tone cuts of crystal models to supplement the conventional line drawings.

—the first text on mineralogy to incorporate numerous photographs and short biographical sketches of distinguished mineralogists.

—a more extensive treatment of gems and precious stones than is usually found in texts on general mineralogy.

The photos are excellent, the type large and clear, and chapters devoted to formation and occurrence of minerals, qualitative blowpipe methods, gemstones, and classification of minerals according to elements are especially commendable.

This excellent textbook contains 664 pages, 735 photos, and sells for $7.50. Published by McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 18, N. Y.

Formation of mineral deposits, by Alan M. Bateman.

Today, more than ever before, the general public is beginning to realize that metals and minerals are the very basis of modern industrial development. Metals all come from minerals and so it is only natural for the general public to enquire how minerals occur in the earth and just how they have been formed. As there has been no book on these subjects, Bateman's *Formation of mineral deposits* is the first ever printed.

There are many mineral deposits throughout the world such as gold, silver, copper, lead, zinc, mercury, tin, manganese, etc. The book tells in simple language the formation of all these deposits. It also discusses the primary sources of mineral substances, how they came to be moved to their present sites, the agents of transportation, how they came to be deposited or concentrated into economic deposits, and how they became affected by the action of weathering or other subsequent geologic processes. It is shown that the many diverse materials of mineral deposits are the products of as many diverse geologic processes that operate within and on the earth's surface.

Not only does the book treat of the formation of minerals, but it has a chapter on the exploration and exploitation of mineral deposits; another chapter on mineral resources of the world and their distribution.

371 pages, illustrated—Price $5.50.

Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

The Agate Book, by Dr. H. C. Dake.

Agate is America's most popular gem stone (at least with amateur cutters) and it is found in practically every state of the Union. Because of the mineral's popularity, many articles have been published on it; ROCKS AND MINERALS devoted an entire issue to it (Special Agate Number, Sept-Oct. 1936 — now exhausted) while several books have also appeared. Dr. Dake, Editor of the *Mineralogist,* not only is an authority on agates, but he knows how to present his facts in an interesting and entertaining manner.

The Agate Book is a mighty interesting publication. It has been prepared chiefly for the many thousands of persons who are interested in agates from the standpoint of collectors and cutters. It is divided into 6 chapters as follows:—Historical; genesis and physical properties; varieties of agate; noted agate localities; agate filled thundereggs; and notes on agate.

This 64 page, red paper covered and well illustrated book sells for $2.00 a copy. When you order a copy, add $2.00 more as a subscription price for the MINERALOGIST (a mighty fine magazine) and send it to Dr. H. C. Dake, Editor of the MINERALOGIST, 329 S. E. 32nd St., Portland 15, Oregon. (Tell him you read the review in R&M).

Gritzner's Geode—A Mineral Paper

Gritzner's Geode, the friendly little mineral paper put out by Gritzner's of Mesa, Ariz., is surely an interesting publication. The October, 1951, issue contained 10 pages crammed full with mineralogical items and notes. If you are not on the mailing list, contact him today for details—Gritzner's, 135 N. Sirrine St., Mesa, Ariz.

Gem and Lithium-Bearing Pegmatites of the Pala District, San Diego County, California, by Richard H. Jahns and Lauren A. Wright.

This is a most interesting report on one of the world's great gem districts and appears to have been prepared especially for the mineral collector. It is profusely illustrated, 13 plates are in color! Maps and drawings are another attractive feature.

All collectors interested in the gem minerals of the Pala District are urged to get this very fine report before the edition is exhausted.

The report is 8½ x 11 inches in size, contains 72 pages, 13 plates in color, 35 figures, and 4 maps in pocket. Price $2.50.

Issued by the State of California, Division of Mines, Ferry Building, San Francisco 11, Calif.

Rocks and their stories, by Carroll Lane Fenton and Mildred Adams Fenton.

This book is essentially for beginners and especially for young people who want to learn something about rocks and a mighty good book it is, for it tells in simple language how rocks are formed, how they may be identified, how a collection of them may be made, etc. Nice illustrations are plentifully distributed throughout the book while the index in the back gives pronunciations for unfamiliar names and other technical terms.

The Fentons are America's most popular authors of books on rocks and minerals for beginners and young people. For 30 years they have been examining rock formations and mineral occurrences in many parts of the world—*Rocks and their stories is* their latest book.

This fine book contains 112 pages, 50 illustrations (frontispiece in color), sells for $2.50, and is published by Doubleday & Company, Inc., 575 Madison Ave., New York 22, N. Y.

Phase Microscopy.

The phase contrast method of microscopy—theory, application, instrumentation, and techniques—receives its first unified treatment in "Phase Microscopy," a new book published in September by John Wiley & Sons.

Alva H. Bennett, Helen Jupnik, Harold Osterberg and Oscar W. Richards, all with the research laboratory of the American Optical Company, have contributed individual sections pertaining to their specialized investigations of the subject. The non-mathematical presentation of the theoretical principles by Dr. Osterberg serves as a basis for the application of the phase microscope. In Dr. Jupnik's discussion of the instrumentation necessary for the application of phase microscopy, she describes the functions and properties of the various elements of the phase microscope. She also includes a description of the necessary alignment and adjustment of the microscope, compares the features of the equipment supplied by different manufacturers, and covers the most recent techniques.

Dr. Richard's extensive investigations of the applications of phase microscopy in the fields or biology, medicine, and industry make it possible for him to deal with the practice of phase microscopy and to illustrate with numerous typical examples the successful applications of the phase procedure. Dr. Bennett, Director of Research of the American Optical Company, has discussed the general aspects of the subject and the correlation of the various problems encountered in the field.

Supplying a thorough working knowledge of this technique that makes possible an examination of materials inherently low in contrast, "Phase Microscopy" is a 320-page book and is priced at $7.50. Published by John Wiley & Sons, Inc., 440 Fourth Avenue, New York 16, N. Y.

Minerals Unlimited Issues Price Lists

Minerals Unlimited, 1724 University Ave., Berkeley 3, Calif., have released 2 small price lists covering new minerals added to their huge stock. One price list titled "Minerals from Central Europe" takes up 5 pages; the other, titled "Minerals from Italy" takes up 4 pages. Collectors interested in acquiring some choice European minerals should send in for copies of these price lists.

Burminco Issues Price List

BURMINCO, 128 S. Encinitas Ave., Monrovia, Calif., have also released a small price list (4 pages) featuring choice minerals from Greenland, Iceland, Norway, Sweden, Africa, Madagascar, and other countries. Some of these items will not last long so you better rush in your order for a copy of the price list.

Grieger's Issues Fall Price List

GRIEGER'S, 1633 E. Walnut St., Pasadena 4, Calif., is another firm to put out a 1951 fall price list. This is a 30 page publication dealing chiefly with lapidary supplies and equipment. It is profusely illustrated. Send for your copy today.

It's A Small World!

Editor R&M:

I sent a copy of R&M (July-August, 1951, issue) to my daughter living in California. Recently I received a letter from her calling my attention to a paragraph on page 382 about green chalcedony from a beach in Marin County, Calif. She writes as near as she can figure from the directions given, that it is her beach where she lives. Small world isn't it? I don't suppose that she would recognize chalcedony if she saw it. ....

Arnold W. Dixon
Foxboro, Mass.

Sept. 2, 1951

FROM AROUND THE WORLD

SPECIMENS

MARTITE, Utah. Sharp, black octahedron groups. Dress up your collection. 2x3" $1.25, 2x2" $ .85.

SPECULARITE, England. On brilliant quartz crystals. Clusters 2x3" $2.75, 2x2" $1.75, others $1.00.

GREEN GARNET, Arizona. Bright oil-green crystal groups. Super! 3x3" $3.00, 2x2" $1.75, 1x2" $ .75.

AMETHYST, Arizona. (Four Peaks) A colorful, showy item. Clusters 3x3" $3.50, 2x2" $1.50, Singles $ .75.

KIDNEY ORE, England. A dandy kidney shaped hematite. 2x3½" $2.75. Others $2.00, $1.50 and $1.25.

COLUMBITE, Brazil. A solid black crystal showing several faces. 2x2½" $4.60. Fine quality.

WITHERITE, England. Large white 4x4" specimens. Some with barite. Special $2.25.

EMERALD, Colombia. Still a few small matrix specimens left at $1.50, $2.50 and $3.50.

TITANITE, Swiss. Crystals on Adularia. Some with Chlorite and other minerals, 2x2" $2.25.

ROCK CRYSTAL SPHERE, Brazil. 2" size, fine quality. Only six of these left at $10.00 each.

LIMONITE, Elba, Italy. A fine crystal pseudo after Pyrite from a good locality. 2x2½" $2.00.

KIMBERLITE, Africa. Chunk of massive diamondiferous "blueground" 2x2½" $1.00. Interesting.

(300 OTHERS)

GEM MATERIAL

TIGER EYE, Africa. Slabs of choice golden 3 sq. in. for $ .75. Red or blue 3 sq. in. for $1.15.

TURQUOISE, Nevada. Hard blue nodules. ¾" $2.00 per oz. 1" to 2" $2.50 per oz. Solid.

SHATTUCKITE, Arizona. Deep blue material looks like Lapis. 3 sq. in. for $ .85. Unusual.

AMETHYST, Mexico. Deep purple, will facet $3.50 per oz. Cab grade $2.00 per oz. Large pieces.

TOPAZ, Mexico. White to pale gold crystals to 3 grams. For facetting. $ .40 per gram and $ .75 per gram.

BLOODSTONE, India. The best. Red flecks on green. Three grades. 3 sq. in. for $ .85, $1.35 or $1.75.

AQUAMARINE, Brazil. Good facetting quality blue at $ .85 per gram in 1 to 3 gram chunks.

AGATE in blues, reds, yellows. Dyed Uruguay material. Bright colors and good bandings 3 sq. in. $1.25.

MALACHITE, Africa. Fine bright green banded material. Better get it now! 3 sq. in. $1.25.

VESUVIANITE, Calif. Green "Calif. Jade." Works up nicely. 3 sq. in. for $ .85.

GARNET, India. Gem quality almandite in pieces 2 to 15 grams. $ .75 per gram. 48 gm single $36.00.

BUDDSTONE, Africa. A brand new item in the U.S. Bright green quartz stone. 3 sq. in. $1.00.

(50 OTHERS)

TOPAZ CRYSTAL SPECIAL! ! !

We made a large purchase from a source deep in Mexico. We have topaz all over the place and offer you these fine specimen values. Transparent white to reddish, terminated singles. 1" $ .75, $ .60, $ .50 each. Smaller at $ .15, $ .25 and $ .35 each. Better order several. For trading get 1/4 lb. 1/4 to 1/2" size half terminated for only $2.50.

IRON PYRITE SPECIAL! ! !

We happened in at Park City, Utah at just the right time. Fine bright cubic clusters 3x4" $3.30, 3x3" $2.00, 2½x2½" $1.25, 2x2" $ .75. Smaller ones at $ .25, $ .35, $ .50. A few SINGLE CUBES 2x2" size at $1.50 each. Smaller singles at $ .35, $ .50 and $ .75.

PHANTOM QUARTZ SPECIAL! ! !

Fine quality Brazillian single crystals. Terminated, transparent and showing one or more distinct phantom inclusions. 1½x3" $1.50, 1x2½" $1.00, ¾x2" $ .75. Smaller ones at $ .25, $ .35 and $ .50 each.

SATINSPAR SPECIAL! ! !

From Niagara Falls, N. Y. A variety of gypsum with a pure white silky luster. Makes beautiful gemstones although soft. We have pieces about finger size 5 for $ .25. 2x2" specimens $ .35, 3x3" $ .55. Larger chunks up to 10 lbs. each at $1.50 per pound.

One only Smoky Quartz Elephant 5" $65.00, Carved Agate Buddah 4½" $35.00, Smoky Quartz Sphere 2¼" $22.50, Agamatolite Figure 10" $5.85.

Write for our 1952 illustrated booklet and our current monthly price list. They are free. You will like our "memo" plan, pay after seeing. We pay all postage. BOOKS, MINERALIGHTS, ORE SPECIMENS. Our organization is dedicated to the MAIL ORDER TRADE.

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Maurice A. Hamonneau, President

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Gem Rough Lapidary & Jewelers Supplies

MOSS AGATE: From India. A translucent, milk white chalcedony with inclusions of green actinolite or other minerals. The inclusions fantastically tree and fern-like, give the gem its designation of "moss agate". Very fine solid material plenty of green moss @ $4.50 per pound.

CARNELIAN AGATE: From Brazil. BANDED, brownish orange to yellow in color translucent. Sound cutting material that will cut excellent cabochons and pendent pieces showing the agate bands. @ $1.75 per pound.

TOPAZ-GOLDEN: From Brazil. (precious). Crystal fragments of good to excellent color for sparkling cabochons and cabinet specimens. @ $1.75 per ounce.

CITRINE: From Brazil. Beautiful golden honey colored citrine for fine faceted gems, crystal clear in 7 to 65 gram pieces @ 60c per gram.

LAPIS LAZULI: From Afghanistan. Rich Royal blue in color, liberally spangled with pyrites which resemble specks of silver. It has become increasingly scarce, and now sold by the carat which is unusual for a cabochon stone. It is prized as a birthstone, and is frequently referred to in the Bible. **VERY FINE** "A" quality material in small pieces about the size of a large pea to the size of a peanut. @ $6.50 per ounce. Takes a high polish with chromium oxide on a leather lap.

SODALITE: From Canada. Very deep blue, lapidary quality, makes richly colored fine blue cabochons. @ $2.25 per pound.

FELKER DIAMOND BLADES: 6" inches .032 $ 7.50
8" inches .040 $10.80
10" inches .040 $14.10
Please state arbor hole size.

WILLEMS FACETING DEVICE: @ $15.00 F.O.B. N. Y. C.

PERRY TRIM SAW: @ $24.75 F.O.B. N. Y. C.

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GRINDING WHEELS: Silicon Carbide. (Please state arbor hole size.)
6 x ½ 120 Grit $2.40; 180 Grit $2.55; 220 Grit $2.65.
8 x 1 120 Grit $4.20; 180 Grit $4.30; 220 Grit $4.45.

FELT BUFFS: Rock Hard. 6 x 1 $6.25, 8 x 1 $9.25.

SILICON CARBIDE: Abrasive grain for lapping.
Grit sizes, 100-200 and 320, 8 ozs. 35c, 1 lb. 60c.
Grit sizes, 400 and 600, 8 ozs. 70c, 1 lb. $1.25.

NORBIDE: "280, 500 and 600 grit $1.10 per ounce, 800 grit $1.65 per ounce.

POLISHING COMPOUNDS: Cerium Oxide, ½ lb. $1.55; 1 lb. $2.90.
Levigated Alumina 60c per pound, Tripoli powder 50c per lb., Red Rouge 50c per lb. Chromium Oxide $1.80 per lb., Linde "A" Ruby Powder $1.20 per ounce.

All merchandise billed at prices prevailing at the time of shipment.

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Is your name on our mailing list? Have you received a copy of our 1951-1952 catalog? The following items are listed: 70 varieties of gem rough, lapidary supplies, cut gems, synthetics, jewelers supplies, books, silver supplies, gem and ring cases, scales, slabs and blanks, ring mountings, and many others. ASK FOR IT. IT'S FREE. **Send for our big Catalog . . . It's FREE!**

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We have **The Senior ROCKHOUND OUTFIT,** with all 8" items, as above, **$111.10.** Then we have the Universal Outfit, with two wheels, and two sanders, on one shaft and all items 8" or 10" diameter for **$75.00,** and ball-bearing too.

Also we have a fine little 6" trim saw for **$17.50,** and 8" for **$27.50;** plus flat laps, and kits, sawing machines from 12" to 30", and the kits, in a wide range of prices from **$69.50** to **$165.00.** Illustrations sent on request.

FINE GIFT MATERIALS

These polishing materials are of unusual beauty and special interest and in such rarity that few collectors have them:

ORBICULAR RHYOLITE—shows how the thunder eggs may form out of lava. A most unusual occurrence with perfect orbs. **80¢** sq. in. Slabs **$1.00** polished.

AGATIZED DINOSAUR BONE—not jasperized, but cells filled with clear agate. Takes a high polish and makes beautiful transparencies. In pieces up to 10 lbs. @ **$3.00** per lb. **35¢** sq. in. In slabs, **45¢** sq. in. polished.

AMERICAN LAPIS LAZULI—rare beautiful blue and only occurrence of note in western hemisphere. 2" sq. in. Slab **$5.00.** ONE ONLY

KINRADITE—rare petite orbs of bright red in silvery metallic background. Makes most unusual rings and brooches. Piece to give 4 sets, **$1.00.**

Massive AMETHYST—in chunks up to 8 lbs. @ **$3.00** lb. Slabs take a fine polish in sizes from 2"x5" to 4"x8" @ **25¢** per square inch.

COVELLITE—gorgeous indigo blue metallic that takes a mirror finish and is one of the most striking sets known. **$7.50** lb. or 75¢ sq. in. Slabs.

RED AGATIZED WOOD from Australia. Polished slabs only, **50¢** sq. in. Fl. green.

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The complete set for testing minerals includes liquids of the following specific gravities:

1.48	2.60	**4.0**	**6.0**
1.75	3.0	**4.5**	**6.5**
2.0	3.3	**5.0**	**7.0**
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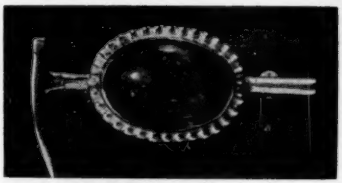

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Specimens with numerous irregular masses of WOLLASTONITE in calcite may be purchased for 1½" 75c and $1.00; 2" $1.50 and $2.00; 2"x3" $2.50 and $3.00; 3" $3.50 and $4.00; 3"x4" $5.00, $6.00 and $7.50. A limited number of larger specimens are available at comparatively higher prices.

GRAYISH-BLUE BARITE

BARITE, a barium sulphate is usually not a fluorescent mineral but a new find at Franklin, N. J., is highly fluorescent and is attractive and will command a front space in your fluorescent cabinet. The grayish-blue spots numerously scattered in pink fluorescent calcite is not only a new combination of colors under the short wave MINERALIGHT and other short wave lamps but is also a very desireable one.

Richly spotted specimens may be had for 1½" 50c; 2" $1.00; 2"x3" $1.50 and $2.00; 3" $2.50. 3"x4" $3.00 and $4.00.

PALE YELLOW NORBERGITE

NORBERGITE is a basic fluosilicate of magnesium occurring in metamorphosed dolomitic limestones. This is another showy Franklin, N. J., fluorescent mineral that should be included in every fluorescent collection. NORBERGITE fluoresces a delicate pale yellow color and occurs as small irregular masses nicely grouped to-gether in limestone. It fluoresces under short wave MINERALIGHT and other short wave lamps.

Desirable specimens may be purchased for 1½" 50c; 2" $1.00; 2"x3" $1.50 and $2.00; 3" $2.50; 3"x4" $3.00 and $4.00. A few larger specimens are in stock.

Prices quoted do not include postage and insurance charges.

Please include enough to cover the recent increase in postal charges.

SCHORTMANN'S MINERALS

6 McKINLEY AVENUE **EASTHAMPTON, MASS.**

We carry a complete line of fluorescent minerals, MINERALIGHTS, etc.

Write for circulars.

Current and Choice Selections

AMPHIBOLE, var. HEXAGONITE, *New York*. Choice lavender xline: 3 x 4", $.75

AVOGADRITE, *Italy*. Yellow crustations, with Malladrite: in 2" vial, $1.50

BABINGTONITE, *Norway*. Minute black xls in pegmatite: 3 x 3½", $3.50.

BISMUTH, *Carinthia*. Xline with loellingite in siderite, polished: 3 x 3¼", $4.50.

CHABAZITE, var. HERSCHELLITE, *Sicily*. Xled on rock: 2 x 3", $3.00.

COLUSITE, *Montana*. A rare, complex, tin sulfide, massive in quartz 2¼ x 3½", $6.00.

COPPER, *New Jersey*. A very good specimen of sheet copper on willemite, etc: 2¼ x 4", $7.50.

CORUNDUM, var RUBY, *Madagascar*. Good hexagonal crystals, not of gem quality but fluorescent: ¾", $2.00; 1". $4.50; 1½", $6.00.

CRYOLITE, *Greenland*. Snow-white masses with brown xline siderite: 2 x 2", $.75; 2 x 3", $1.00; 3 x 4", $2.50.

DOLOMITE, *Italy*. Large twinned crystals with xled mesitite: 2½ x 4½", $7.50.

HALITE, *Germany*. A nice cleavage, colored deep blue: 3¼ x 3¼", $3.50.

HAUERITE, *Sicily*. Sharp octahedral xls: ½", $4.00; ⅝", 7.50.

HEULANDITE, *Tyrol*. Reddish xls on rocks: 3 x 3¼", $4.00.

IRON, METEORITIC, var. SIDERITE, *San Angelo. Texas*. Polished and etched: 432 grams, 3 x 5¼", $26.00.

JORDANITE, *Germany*. Massive, banded with sphalerite: 1½ x 2½", $2.50; 2 x 2¼", $5.00.

LAZURITE (Lapis Lazuli), *Afghanistan*. Attractive blue masses in rock (polished): 1½ x 1½" to 2 x 3", $.75, $1.00, $1.50, $2.00, $2.50; 2 x 4¾", $4.00.

MENDIPITE, *Scotland*. Gray xline on manganese ore: 1 x 1½", $2.50; 1½ x 2", $5.00.

ORTHOCLASE, *England*. Twinned crystals pseudomorphed to cassiterite: 1", $1.00; 1¼", $1.50.

PARAVAUXITE. *Bolivia*. Choice groups of triclinic crystals on rock: 1 x 2", $1.00; 2 x 2", $2.00; 2 x 3", $3.00; 3 x 4", $5.00.

QUARTZ, *Michigan*. Drusy, light green: 4 x 7½", $2.50.

SEPIOLITE, *Asia Minor*. Massive white: 1½ x 2", $1.50.

SILVER, *Cobalt*. Rich veins with smaltite and niccolite: 2 x 3", $7.50. Very rich thick vein with smaltite: 2 x 4½" $15.00

STEPHANITE, *Saxony*. A small but good crystal group: ⅜ x ⅜", $4.50.

TARBUTTITE, *Northern Rhodesia*. Small groups of triclinic crystals, ¾ to 1", 4 for $1.00.

WARD'S NATURAL SCIENCE ESTABLISHMENT, INC.

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